Journal of Accountancy, August 1933 Vol. 56 Issue 2 [whole issue]

American Institute of Accountants

SINGLE COPY 35 CENTS PER ANNUM $4.00

The JOURNAL *of* ACCOUNTANCY

VOLUME LVI AUGUST, 1933 NUMBER 2

CONTENTS

Issued Monthly by
AMERICAN INSTITUTE PUBLISHING CO., INC.
Publication Office, 10 Ferry Street, Concord, N. H.
Editorial and General Offices, 135 Cedar Street, Manhattan, New York, N. Y.

President, JOHN B. NIVEN, 80 Maiden Lane, New York, N. Y.
Treasurer, JAMES HALL, 40 Exchange Place, New York, N. Y.
Secretary, A. P. RICHARDSON, 135 Cedar Street, New York, N. Y.

Entered as second-class matter at the Post Office at Concord, New Hampshire, under Act of March 3, 1879

Authors of Articles in This Issue of THE JOURNAL OF ACCOUNTANCY

Roger Barton. With Daniel Starch and Staff, New York, New York

A. C. Littleton. Certified Public Accountant (Illinois). Professor of Accounting, University of Illinois, Urbana, Illinois.

H. G. Humphreys. Associate, American Institute of Accountants. Certified Public Accountant (Oklahoma). With the Skelly Oil Company, Tulsa, Oklahoma.

Important to Subscribers

Subscribers are requested to send notices of change of address five weeks before they are to take effect. Failure to send such notice will result in the incorrect forwarding of the next copy and delay in its receipt. Old and new addresses must be given.

The speedy hands of the typist *need never leave the keyboard*

THE MOTOR RETURNS THE CARRIAGE

A mere touch of the "return" key which is conveniently located on the keyboard, causes the motor to return the carriage to the starting position, or to any predetermined intermediate point. Spacing to the next writing line is automatic . . . and accurate.

THE MOTOR SHIFTS TO CAPITALS

A light depression of the "shift" key (normally used to shift the platen manually) causes the motor to shift the platen instantly to the upper position. Thus, "shifting" is instantaneous, light and easy . . . the motor does the work.

The keyboard is standard . . . There is no new touch to learn

Think what this new development means in the saving of time and energy; how much faster and easier it makes typing; how it increases production, and results in a consistently better grade of work.

Like all Burroughs machines, this new typewriter is built to give long, dependable, economical service. It is guaranteed by Burroughs; it is backed by Burroughs' own worldwide service organization . . . skilled and experienced in servicing electrically controlled Burroughs machines. Burroughs Electric Carriage Typewriters—as well as all other Burroughs typewriters—are now being displayed at local Burroughs offices. Telephone for a demonstration, or write for illustrated, descriptive folder. Burroughs Adding Machine Co., 6408 Second Blvd., Detroit, Mich.

BURROUGHS
Electric Carriage
TYPEWRITER

The JOURNAL *of* ACCOUNTANCY

Official Organ of the AMERICAN INSTITUTE OF ACCOUNTANTS

A. P. RICHARDSON, *Editor*

[*Opinions expressed in* THE JOURNAL OF ACCOUNTANCY *are not necessarily endorsed by the publishers nor by the American Institute of Accountants. Articles are chosen for their general interest, but beliefs and conclusions are often merely those of individual authors.*]

VOL. 56 AUGUST, 1933 No. 2

EDITORIAL

New Orleans—October The annual meeting of the American Institute of Accountants is to be held this year in New Orleans, Louisiana. Under the provisions of the by-laws, as amended two years ago, the date of meeting has been set for the third week of October. One of the many advantages of this change is the fact that any objections which might be raised to a meeting in the far south in September, the old month of meeting, have no effect today. October in New Orleans is said to be one of the most pleasant months of all the year. The hospitality of the old town is famous, and there is no doubt whatever that if it lie within the power of the accountants of Louisiana and the neighboring states to make the convention a success it will be done. The program which has been arranged is full of interesting events of a professional and technical nature and in addition a series of excursions and entertainments has been prepared which must allure everyone. People who know New Orleans will want to go back, and those who have not been so fortunate will certainly desire to take advantage of the opportunity to see one of the most interesting cities on the whole American continent. Furthermore, the worst of the depression is surely past and there will be not so much cause to consider expense this year as there has been for at least two years past. The committee on arrangements urges every member of the Institute to make a special effort to be present and assures everyone a hearty welcome and an exemplification of the well-known southern hospitality.

Election of Auditors A recent enactment of the legislature of Pennsylvania is the first definite approach to the principles embodied in the English companies acts which has found its way to American statute books. For a long while there has been a strong sentiment in favor of adopting several of the important features of the English acts, particularly with reference to the election of auditors. In one or two cases, there have been introduced in state legislatures bills which followed fairly closely the principles of the English acts, but they have not reached the statute books. They have been defeated or have never come out of committee and it has remained for Pennsylvania, which by the way was the second state in the union to enact a certified-public-accountant law, to put into effect the requirement for independent audit conducted as it is generally conducted in British practice. The new law in Pennsylvania reads in part as follows:

> Section 318. Financial report to shareholders. Unless the bylaws expressly provide otherwise the directors of every corporation shall cause to be sent to the shareholders within ninety days after the close of the fiscal or calendar year a financial report as of the closing date of the preceding fiscal or calendar year. Such report shall give a summary of the assets and liabilities of the corporation, the amount of dividends paid or declared during the past year, the condition as to surplus or deficit and how acquired or created, the number of shares issued and outstanding, together with any such particulars as are necessary to disclose the general nature of the liabilities and assets of the corporation. The report shall also set forth a balance-sheet as of the closing date of the preceding fiscal or calendar year, together with a statement of income and profit and loss for the year ended on that date. The statement of income and profit and loss shall be prepared in the form ordinarily used by accountants for the particular kind of business carried on by the corporation. Unless the bylaws expressly provide otherwise, all such reports shall be certified by an auditor elected by the shareholders of the corporation.

This law, while not quite so definite as its English prototype, favors the theory that the auditor should be the employee of the shareholder rather than of the directors or managers of the company. It has been the feeling of this magazine for many years that sooner or later the method of selection of auditors which has generally succeeded in Great Britain would be adopted in this country. It is certain that the Pennsylvania experiment will be watched with a great deal of interest by business men, shareholders, bankers and auditors in other states and if, as it seems highly probable, the new law is productive of good results, it is reasonable to suppose that the movement will spread with considerable rapidity and that some day in the comparatively near future the election of auditors by shareholders will be the common American practice.

Why Election Is Preferable

The arguments in favor of election, as opposed to appointment, have been reiterated in these pages. In brief, the chief merit of election by shareholders is the totally independent status which such a method of selection implies. We all know that a reputable accountant is not supposed to be swayed in any way by the fact that he owes his appointment to a group of directors. He is supposed to express a fair and impartial opinion without thinking for a moment of the source of his engagement. Probably in ninety-nine cases out of a hundred the auditor is able to detach himself entirely from any question of obligation except an obligation to the cause of truth. But, when all is said and done, the auditor is human and he can not always be expected to forget that it may seem perhaps a little ungracious to indulge in condemnation of the administration of a corporation when its administrators are his direct clients. If employed by shareholders he stands entirely independent of any influence and he can, without doubt, more freely express his views than he could if he were the chosen appointee of the men whose administration he was called upon to criticize either favorably or adversely. One of the principal arguments against the election of auditors by shareholders is the prevailing indifference of American stockholders to the method of the administration of the companies of which they are, in fact, the owners. The average investor in common stock of a company is prone to overlook his actual and legal ownership. He invests far too often simply because he believes that a company is well run, is producing satisfactory results and is a fit and proper medium for the employment of his funds. He does not realize as he should that he and his fellow shareholders are the owners and that it is their business which is being run well or ill. He regards with some interest the report of the auditors upon the operations of the year, but he still does not think of himself as the one whose property is under review. It has been said—and it is probably quite true—that for some time to come, if election of auditors were the custom, the shareholder would fail to take the vital and personal interest in corporation meetings and in the conduct of corporation affairs to which he is entitled. He would still probably sign proxy forms sent him before each annual meeting and would allow the directors, who usually control the majority of the stock either directly or indirectly, to go through the formality of electing officers and directors and auditors. It would seem, therefore, that there might be little difference between election of auditors by proxy votes controlled by the directors and appointment of auditors by the directors themselves. We should have to go through a period of transition, in which the shareholder would become aware of his responsibilities and would receive an education in the duties of stock ownership which so far he has not had. That, however, is no valid argument against election of auditors. Every reform comes about slowly. To say that because a scheme of reformation would be slow it should never be attempted would be absurd. As a matter of fact, we believe that shareholders quite generally would welcome an opportunity to select the umpire and would very soon begin to feel an interest in the act of election which he does not feel at present in any of the proceedings of annual meetings. At any rate, whatever be the prospect of educating the American shareholder, he now has in Pennsylvania, at least, an opportunity to show what he will do with a new power conferred upon him.

What Accountants Would Gain

Public accountants, generally speaking, are supposed to favor the election of auditors by shareholders. A few members of the profession seem inclined to cling to the old American custom of appointment by directors, but, if inquiry and investigation can demonstrate, the majority of professional practitioners will support cordially a change to the British practice. The position of the auditor under the English companies acts is immensely strengthened by the law which precludes the unwarranted termination of an auditor's engagement. Under our ordinary practice a board of directors may dispense with the services of an accounting firm for any cause or for no cause. It is well known that many accounting engagements have been ended abruptly because the auditor would not be amenable to dictation by the directors. That could not happen under the English law. There, the auditor's term of election is for one year and he may offer himself for reëlection at the end of that period. If he desires reëlection he can not be supplanted by some other auditor without cause. In other words, if he does his work well and fairly, he may continue his engagement year after year without fear or favor and he may criticize, in any way which is just, the acts of the management and of the directorate without placing himself in danger of dismissal. That one fact in itself is about as strong an argument in favor of election as could possibly be imagined. The Pennsylvania law does not cover this particular point. Indeed, the new law is not complete in its adherence to the British precedent, but it is an entering wedge and if it be found as satisfactory as accountants expect it to be it can easily be strengthened and expanded until the position of the accountant and his absolute independence will be quite as thoroughly assured as they are anywhere in the world today. Every accountant will follow with keen hope the development of the Pennsylvania experiment.

Pure Philanthropy Some accountants have been slightly perturbed and others considerably amused by the touching solicitude for the welfare of the profession evinced by the editor of a weekly magazine. In a letter addressed to a number of accountants the editor in question drew attention to the probability that accountancy was entering a new day which would be rich with possibilities for activity. He felt that accountants should not overlook the splendid opening which was before them and that they should let the world know of their existence and presumably of their abilities. In other words he seemed to be impressed with the desire to have accountants awake to the value of their heritage and to demonstrate that awakening by bursting into print in the form of advertisement. This opinion was expressed primarily in certain notes which appeared in the magazine of which the editor is in charge. It was really quite beautifully evident that this editor wanted to see accountants advance in step with the progress which most people believe, and others hope, is about to take place in general business. Following the impersonal appeal for recognition of their possibilities, letters were addressed by the same editor to several accounting firms pointing out to them the peculiar advantages which would accrue from advertising in his magazine. The connection between the editorial comment and the personal letters may have been pure coincidence. Some of the accountants who received the letters took the trouble to respond, pointing out that accountancy, being a profession, was in a different category from ordinary trade and that advertisement was, therefore, for them taboo. The comment and the letter must have been dictated by a lapse of memory, because we are quite sure that this particular editor must know that advertising by professional men does not meet with the favor of any profession.

Professional Sentiment Is Increasing

Perhaps no harm is done by the incident which gave rise to the letters written by accountants in explanation of accountancy's professional status. It is, however, little astonishing that in this late day there should still be a lingering belief on the part of some people that it is not only proper but desirable for professional men to advertise. We doubt if any serious attempt would be made to convince lawyers or doctors that they should advertise their attainments. Accountancy has been officially, legally and generally recognized as a profession. Its professional standing should be a matter of common knowledge. But education is a slow process and perhaps it is not quite so disappointing as it seems at first that there should still be efforts to induce accountants to forego their professional codes of ethics and to enter into a campaign of self-laudation. It has been said times out of number in these pages that there is nothing for an accountant to advertise. It is inconceivable that a man should inform the world that he is peculiarly well qualified to perform certain professional tasks. Probably every one would admit this. What, then, remains to be made the subject of advertisement? To the accountants who have written us, more in sorrow than in anger, that they should be requested to solicit practice by means of the public prints, we can only say that no victory was ever thoroughly effected in an instant. The time which has elapsed since the establishment of professional accountancy will be not more than an instant in the history of the profession which has come into being and will continue probably so long as business is conducted. The only thing for accountants to do is to maintain steadfastly their adherence to the strictest code of procedure and to educate as rapidly as may be the people to whom the knowledge of the facts has not yet come. It is absolutely certain that the sentiment opposed to professional advertisement is gaining ground every day, and he would be a hardy and ill-informed prophet who would predict that there would ever be a departure from the standards which have been set.

A Lawyer Discusses Solicitation

Closely allied to the question of professional advertising is what is known as solicitation of business. Accountants sometimes feel that they are the only ones to whom this problem is of special importance. It is comforting, therefore, to find that other professions are similarly afflicted. In a recent address delivered by Guy R. Crump, president of the state bar of California, this whole question of solicitation was admirably handled. In the course of his remarks, Mr. Crump said:

"That solicitation of business by lawyers is unethical and degrading to the profession is historically, at least, too well established to admit of dispute."

He then went on to quote from the rules of conduct of the California bar and the following well known canon, number 27, of the canons of professional ethics of the American Bar Association:

"The most worthy and effective advertisement possible, even for a young lawyer, and especially with his brother lawyers, is the establishment of a well-merited reputation for professional capacity and fidelity to trust. This can not be forced, but must be the outcome of character and conduct. The publication or circulation of ordinary simple business cards, being a matter of personal taste or local custom, and sometimes of convenience, is not per se improper. But solicitation of business by circulars or advertisements, or by personal communications or interviews not warranted by personal relations, is unprofessional. It is equally unprofessional to procure business by indirection through touters of any kind, whether allied real-estate firms or trust companies advertising to secure the drawing of deeds or wills or offering retainers in exchange for executorships or trusteeships to be influenced by the lawyer. Indirect advertisement for business by furnishing or inspiring newspaper comments concerning causes in which the lawyer has been or is engaged, or concerning the manner of their conduct, the magnitude of the interests involved, the importance of the lawyer's position and all other like self-laudation, defy the traditions and lower the tone of our high calling and are intolerable."

It will be noted that the rules of the American Bar are quite like those of the American Institute of Accountants. A so-called card is permissible but not encouraged. Mr. Crump then continued:

"The principles of professional conduct thus stated find their origin, no doubt, in the early history of the legal profession, and their justification in the fact that public policy is opposed to the exciting of litigation and the degradation of the practice of the law from the status of a profession to the purely mercenary level of a trade or business.

"Please do not misunderstand this reference to trade or business. Both, if properly conducted, have an equal place and an equal standing with the learned professions. Nevertheless, the law—unlike trades and businesses—is not primarily a money-making vocation. To make it so is to destroy its usefulness and in the end to undermine the structure of government."

Money-Making Not All We wish that every accountant as well as every lawyer and other professional man would take to heart the emphasis which Mr. Crump lays upon the importance of keeping professional work on some plane not wholly mercenary. It is all well enough to say that a professional man, like every one else, must pay attention to the dollars and cents. He is entitled, like any other laborer, to his hire. But that is not to admit that the question of hire or compensation is the only or even the paramount factor. There are countless tradesmen who feel such a pride in the excellence of their work that they think first of doing a good job and secondly of being well paid for it. We all like to hear of the men who work because of their pride in the work they do. The old story of the three stone-cutters, of whom the first said he was working for $5.00 a day; the second, that he was cutting a stone; the third, that he was building a cathedral, arouses in every one of us a thrill of admiration for the last of the three. It is of such men that the world is proud and it is from their work that lasting memorials ensue. If that be so of the cutting of stone and the joining of wood, how much more truly should it be said of the men who work with their minds and bring into play their professional knowledge and experience, to the end that out of their efforts something great or small will be added to the sum total of human accomplishment. The editor, to whom we have referred, struck the right note when he said that the possibilities of accountancy were enormous and alluring. He made, however, a discord, when he struck with it a note in the mercenary scale. The young accountant who is starting out in practice and has no great amount of this world's goods can not ignore the question of compensation, and to some such men it may sound rather like a counsel of perfection to say that they should depend upon their success from the fruits of their labors. They have no labors to perform—How are they to impress the world with their abilities and capacities? Every one who regards the subject intelligently will admit at once that there is great force in the argument that the young man must do something to make himself known if he is ever to succeed in his chosen vocation. But we are firmly convinced that however difficult may be the first few years, lasting success and high repute will come only by waiting as patiently as possible until fate or fortune or friendship or some other extraneous element brings about the chance which will lead to success, if it be accepted with one eye always upon the unmercenary side of the question.

Too Big

One of the very large corporations in American industry is reported to have issued an announcement that the magnitude of the corporation and its activities was so great that it did not find it practicable to submit its fiscal affairs to audit by independent accountants. The inference was that no accounting firm could possibly undertake a comprehensive audit of the company with its multitude of branches and subsidiaries. At first glance this may seem a reasonable defense of the company's determination to avoid the employment of auditors; but we do not think the argument is sound. One of the greatest corporations in the country is the United States Steel Corporation which has been audited regularly for a great number of years and has never indicated the slightest willingness to dispense with the services of auditors. One of the greatest companies with ramifications everywhere is General Motors and we believe the directors, officers and shareholders of that vast organization of industry would not for a moment consider the possibility of carrying on without the assistance of public accountants. The corporation which made the statement that it was too large to submit to audit is the Standard Oil Company of New Jersey. Every one knows that the conduct of this company has been in the hands of singularly able and competent men. Its tremendous success is an inspiration to every friend of industry. It would of course be a great task for any firm of accountants to undertake the audit of the Standard Oil Company, but we do not admit that there is not a firm which could perform a satisfactory audit even of so great a company and we do not admit that the company would not be greatly assisted by an investigation and report conducted by accountants of standing. Even if there were not, however, a firm sufficiently widespread to undertake the audit of all that the Standard Oil Company does and owns, it would still be possible to employ accountants in the various localities where the business is conducted and out of the reports which would be rendered by these local firms acquire a knowledge and submit to the public a report which would be conducive to public confidence and understanding. We do not mean to infer that there is any serious question of the reputation of Standard Oil, but it is obvious that an independent report upon its condition such as is required by the New York stock exchange would be of benefit to all concerned. The argument of mere size is not sufficient. It is because of the widespread interests of many of the large corporations that the so-called national accounting firms have grown to such breadth. The advantages of independent audit are available to the largest and the smallest of companies and we believe that Standard Oil as well as the other leading companies of the country will have to admit the facts.

Independent Audits for Investors

By Roger Barton

"We have felt that in view of the very unsettled state of affairs, our stockholders would feel more assured of the facts if such an audit was made by an independent company, and we feel that it was of value to do so."

So H. J. Mellum, secretary of Nash Motors Company, comments upon the fact that his company had independent audits made of its accounts in 1931 and 1932. Another concern, the Associated Gas and Electric Company, has had its accounts examined by independent auditors since 1910. Prior to 1930, this parent company felt that examinations by public service commissions in various states was sufficient check upon the financial statements of its operating companies. However, a recent issue of the *Associated Magazine* carries this statement:

"Since 1930, however, all operating subsidiaries of the Associated Gas and Electric System have been audited by independent certified public accountants, the management feeling that in times of economic distress its security holders would feel better satisfied to have an independent check on the accuracy of the accounts."

In regard to its 1932 annual report, Cities Service Company makes the following statement:

"Conforming to present trends in the direction of issuing statements certified by public accountants, the 23rd annual report to stockholders of Cities Service Company for the year 1932 . . . includes audited income accounts and balance sheet. . . . The financial statements are the most complete ever issued by the company."

This policy on the part of these companies reflects the increasing attention given to independent auditing by investors, by associations such as the New York Stock Exchange and the Edison Electric Institute, and by individual companies themselves. Moreover, these companies are having not only their own accounts audited independently, but also the accounts of their subsidiaries. It is not likely that companies which have been moved by the exigencies of uncertain times to institute independent audits will abandon the practice when most financial statements once again become reports of profits.

Of course, all companies which issue securities may be required to employ independent audits according to reports of the proposed national securities regulation bill. At the present writing various plans for requiring frequent reports under uniform accounting systems are under consideration.

It is easy enough to understand such a desire on the part of investors. The amazingly casual manner in which the finances of Kreuger & Toll were conducted, and the disconcerting disclosures made in the investigation of other companies which have crumbled under the present economic stress, have left the investing public with a natural desire for more careful checks on the financial affairs of corporations.

Investors are probably aware that independent audits are no nostrum for corporate financial ills, and that even accountants may have different views on the same accounting problem. They should realize, moreover, that audits are no substitutes for old-fashioned Scotch caution, and that "caveat emptor" is not a maxim to justify the seller so much as a rule to caution the buyer. Even the best audits, the most complete and informative certificates and pages of comments by public accountants are no substitute for common sense. And, of course, there are many factors which must be considered in judging the credit and success of an enterprise other than mere figures of earnings included in a statement of financial condition, whether audited or otherwise.

However, these investors are also aware that a corporation's interpretation of its own annual report figures may not be the only interpretation. It is the desire of investors to have information as accurate and adequate as possible in case there is room for more than one conclusion from these figures.

The New York Stock Exchange has announced that after July 1st of this year all corporations applying for the listing of their securities must have independent audits made of their books. In a recent letter to presidents of corporations, the exchange declares that public response to this ruling "indicates clearly that independent audits are regarded by investors as a useful safeguard." The letter further declared:

> "If, however, such a safeguard is to be really valuable and not illusory, it is essential that audits should be adequate in scope and that responsibility assumed by the auditor should be defined. The exchange is desirous of securing from companies whose securities are listed, and which now employ independent auditors, information which will enable it to judge to what extent these essentials are assured by such audits."

It is possible that more comprehensive rulings on audits may follow the completion of this survey by the exchange.

The demand for independent audits was recognized by the Edison Electric Institute when it was formed to supersede the National Electric Light Association. One of the requirements which utility companies must meet to be entitled to membership in the Institute is stated as follows:

"The company members shall from time to time and not less than annually publish financial statements, including balance-sheets showing the gross and net incomes, operating expenses and surplus gains, which statements shall be certified by independent certified public accountants, who shall have audited the books of the company."

It is interesting to note that this demand for better reports has been extended to include public finances. At a recent meeting, the New York State Society of Certified Public Accountants resolved to call upon President Roosevelt, Governor Lehman, and other officials and bodies concerned, "the great desirability of the publication of more informative, prompt, and frequent reports relating to the public finances." According to the society, governmental financial statements should be made "as clear and informative as the statements developed by modern accounting systems and employed by the most advanced industrial corporations." There is little doubt that if independent audit firms were allowed to make comprehensive municipal audits, and set up simple, understandable statements of the municipality's business, these would be of great assistance in securing presently desirable tax reductions.

In view of the prevalent interest in independent audits, it is interesting to ascertain the extent of this practice among America's great corporations. Of course, audits in the sense in which they are used in current political and social discussion are not confined to mere verification of assets and liabilities, income and expenditures. They really have to do with independent verification of essential facts concerning particular activities, whether public or private. While financial data are customarily furnished by certified public accountants, there are also data which must be supplied by statisticians. For example, the Audit Bureau of Circulations certifies the circulation figures of newspapers and magazines. In regard to municipal securities, important figures like population and population growth can best be supplied by census statistics. In regard to data on municipal bonds, particularly revenue bonds, some data are susceptible of ordinary factual verification, such as miles of water mains, use of water per capita, value of taxable property, and reasonableness of assessments.

However, this study is primarily concerned with present corporation practices. In an investigation made by the author of the accounting practices of 83 of the country's largest and most representative concerns, it was found that 72 of these companies, or 87 per cent., did have their accounts audited by outside auditors. In cases where these companies had subsidiaries, the accounts of these subsidiaries were also examined by independent auditors. This percentage corresponds closely with the result of a survey conducted by the New York State Society of Certified Public Accountants of the 1931 annual reports of companies with stocks listed on the New York Stock Exchange. This survey showed that 83 per cent. of these annual reports were audited by independent accountants.

This study also reveals that in most cases, independent audits have been made for several years. Seventy companies which reported employing outside accountants, have had independent audits for an average of eighteen years.

The letter which was sent these 83 companies asked the following questions:

1. At what date did you commence to have the books of your company inspected by independent auditors?
2. Since what date have the various subsidiary companies been independently audited?

Of the eleven companies which replied that they did not have independent audits, six are railroads, two are banks, two are oil companies, and one is a tobacco company. Some of these cases deserve special comment.

It is not customary for railroads to use independent audits, because of their regulation by the interstate commerce commission. The commission prescribes all accounting classifications for interstate carriers. The books of accounts and files are subject to inspection, verification, or audit by the commission at its discretion. In addition to monthly and other reports, a comprehensive annual report is filed under oath by the carrier.

The question was put to Alexander Wylie, director of the bureau of accounts of the interstate commerce commission, as to whether this is an ideal procedure; whether it would not be desirable for the railroads also to have their accounts examined by independent auditors. Mr. Wylie replied:

"In section 20 of the interstate commerce act, the commission in its regulation of commerce in the public interest, is empowered to prescribe a uniform system of accounts for all carriers subject to the act, and to police their accounts through examinations, since no accounting regulation can be regarded as self-enforceable. As the accounting force available under the appropriations allowed the commission has other special duties to perform, it has not been possible to make these examinations oftener than once in several years."

Mr. Wylie's suggestion for a better system of audits:

"In the interest of stockholders, it is my opinion that the British plan of annual audits by accountants responsible to the stockholders and reporting to them would be an ideal procedure."

Apparently the banks also have felt that independent audits are not required, inasmuch as banks come under the supervision of the state or national governments. However, the system of compulsory independent audits practised by Canadian banks is said to have helped Canadian people retain confidence in their financial institutions during the banking crisis. This suggestion is obtained from a discussion of the Canadian system by Andrew Stewart, partner of Haskins & Sells, at a recent meeting of the New York State Society of Certified Public Accountants. In outlining the audit provisions of the Dominion banking laws, Mr. Stewart told how these provisions call for the appointment by shareholders of two auditors not belonging to the same firm. If the same auditors are reappointed by stockholders, and serve two years in succession, one has to be replaced by another independent auditor. Annual and special statements to stockholders, certified by independent auditors, are required. The Canadian plan specifies the details of the assets and liabilities which must be disclosed.

Perhaps, in view of their recent experience, banks will be more liberal in the future in giving information to stockholders. The recent action by James H. Perkins, chairman of the board of directors of the National City Bank, in instituting a policy of prompt and complete information to stockholders on all major developments affecting the institution, is a move that may be followed by other banks.

In response to a query as to how banks listed on the New York Stock Exchange met requirements of the exchange in respect to independent audits, J. M. B. Hoxsey, executive assistant on the committee on stock list, replied that there are only five bank stocks listed on the exchange, and these are very seldom quoted. He said that because of their supervision by the New York state department of banking or by the national government, the exchange has no requirements as to their being audited.

The question of independent audits of security affiliates of banks has been obscured by the doubt cast over the future of these affiliates themselves. The National City Bank has divorced its security affiliate. Winthrop W. Aldrich, president of the Chase National Bank, has proposed to shareholders the discontinuance of securities distribution by the Chase Securities Corporation and the liquidation of the latter's wholly owned subsidiary, the Chase Harris Forbes Corporation. Albert H. Wiggin, in his report to shareholders of the Chase National Bank on January 10th, mentioned that the Chase, since 1921, has invited and received examination by the office of the comptroller of the currency for its security affiliate, without legal compulsion. Mr. Wiggin added:

> "I would advocate amending the Glass bill so as to provide by law for examination and regulation of all security affiliates of member banks, and I would have power given to the federal reserve authorities to develop regulations and a general code, to be authoritatively applied to such institutions—which, of course, they could only do to their member institutions."

According to J. B. Harvie, treasurer of the American Tobacco Company, it has not generally been the practice among tobacco corporations to rely upon outside accounting assistance, because many of the problems that require professional auditing do not exist in this business. He refers particularly to the question of inventory, in which there is often room for serious errors. The American Tobacco Company was one of the first of the larger corporations in the United States to adopt scientific cost accounting. In the accurate cost accounting procedure adopted by this company, all materials are inventoried monthly, and the manufacturing stock and revenue stamps are inventoried daily, as the Federal internal revenue tax law requires. Mr. Harvie concludes:

> "The company's activities are many and widespread throughout the United States, as well as abroad, and the delay incident to outside auditing would seriously interfere with the company's long-established, and we think efficient monthly cost accounting system, which practically requires the equivalent of twelve closings of its books during a single year, whereas many corporations by their nature make such a procedure necessary but once a year."

The Standard Oil Companies of New Jersey and of Indiana reported that they did not employ independent audits. Directors of the Standard Oil Company of New Jersey have considered the matter in relation to the requirements of the New York Stock Exchange, but have been unable to make necessary arrangements, President Walter C. Teagle informed stockholders at the annual meeting on June 6th. He said, "The only thing the outside auditors could audit would be the consolidated account. Their certificates would only represent the consolidation of all these accounts—the business is too big, too ramified, and there are too many companies involved for us to have an outside audit."

Public utilities, especially holding companies, have a particularly good record in independent audits. Twenty-one companies reported that they employed independent audits. Accounts of subsidiary companies were also examined by outside accounting firms. The utilities began to employ independent audits about 1914, although public utility commissions in the various states have required that utility operating companies file periodic reports under oath. No doubt the fact that utilities have to do a large volume of financing in order to obtain funds for construction, and that therefore they have large numbers of stockholders, has influenced them to use independent audits.

Here, again, it must be emphasized that audits can not prevent improper or injudicious management, although they may help remedy such situations. This is seen in the case of one of the great utility systems which has succumbed to the depression, with loss to thousands of investors. The accounts of this utility system were audited regularly by two firms of independent accountants, and annual reports displayed the certificates of the two firms. Both accountants and investors apparently accepted without serious objection most of the practices blamed as the fundamental causes for the system's financial trouble, although these practices were shown in the reports.

For example, the practice of a utility holding company of designating as security for short-term collateral loans its controlling stock interests in subsidiary operating companies has already brought substantial losses to public utility investors. When stock values decline, and it is impossible to find additional collateral, the holding company loses its interest in the subsidiary through foreclosure of the collateral stock it has pledged.

Moreover, the value of an independent audit, whether in a public utility company or elsewhere, depends upon how independent the audits are. This is pointed out by Milo R. Maltbie, chairman of the New York public service commission, who writes:

> "The value of independent audits depends, like a great many other things, upon how independent the audits are and how thoroughly they are done. I know instances where the president told the auditors what kind of report they wanted to make, and they made it. Of course, such a report is worthless. I also know instances (more numerous in England than in the United States) where the auditors set forth the facts regardless of the officers of the corporation who employed them.
>
> "Auditors who are selected by officers are much less inclined to be independent than those selected by stockholders, which is the English plan. In other words, the value of an 'independent audit' depends more upon the standing of the auditors and the thoroughness of their investigation than upon the fact that the auditors are not upon the regular staff of the utility which they are investigating."

In this connection, it would seem that the accounting profession is on the threshold of a great opportunity for service in protecting investors and in helping to restore confidence by meeting adequately their professional responsibilities.

The scope of the independent audit should be sufficiently broad to make it a real protection. Restricted audits should be viewed with suspicion. The ideal procedure is to make the audit public; a mere certificate is reassuring, but a complete letter including recommendations and qualifications of the public accountant is informative as well.

It is evident from this all-too-cursory survey that the practice of independent audits, which was becoming common among America's great corporations about a score of years ago, is being given momentum by the events of the economic revolution which we are experiencing.

The English plan of examination of accounts by auditors selected by the stockholders and responsible to them has been praised. It is a plan which has been suggested by separate authorities as desirable for the railroads, the banks, and the public utilities. It should not be surprising to see the practice of independent audits in this country take such a development.

As the situation stands now, however, it is apparent that considerable credit is due America's great corporations for their voluntary and almost unanimous action (except in cases where they come under government supervision) in adopting the practice of independent audits.

NOTE.—In cases where date when independent audit began is earlier than organization date, companies have given dates when independent audits were instituted by their predecessor companies.

PUBLIC UTILITIES

	Independent audits began	Company organized	Independent audits for subsidiaries
American Water Works & Electric Company..	1915	1914	Yes
Associated Gas & Electric Company.........	1910	1906	Yes
Columbia Gas & Electric Corporation.......	1926	1926	Yes
Commonwealth Edison Company...........	1905	1901	—
Commonwealth & Southern Corporation.....	1929	1929	Yes
Connecticut Power Company...............	1924	1905	Yes
Consolidated Gas Company of N. Y.........	"Several years ago"	1884	Yes
Consolidated Gas Electric Light & Power Company of Baltimore..................	1910	1906	Yes
Detroit Edison Company..................	1903	1903	Yes
Edison Electric Illuminating Company of Boston...............................	1893	1886	No Subsidiaries
Hartford Electric Light Company...........	1920	1881	No Subsidiaries
New England Power Association............	1926	1926	Yes
New York United Corporation..............	1929	1929	Yes
Niagara Hudson Power Corporation.........	1929	1929	Yes
North American Company.................	1904	1890	Yes
Pacific Gas & Electric Company............	1905	1905	Yes
Public Service Corporation of New Jersey....	1910	1903	Yes
Southern California Edison Company, Ltd....	1909	1909	Yes
Stone & Webster, Incorporated.............	"Many years ago with original partnership"	1929	Yes
United Gas Improvement Company.........	1916	1882	Yes
United Light and Power Company..........	1913	1923	Yes

TRANSPORTATION

	Independent audits began	Company organized	Independent audits for subsidiaries
Atchison, Topeka & Santa Fe Railway Company	I. C. C.	1895	I. C. C.
Baltimore & Ohio Railroad Company........	1899–1901 only I. C. C.	1827	1900, I. C. C.
Canadian Pacific Railway Company.........	1908	1881	—
New York Central Railroad Company.......	I. C. C.	1914	I. C. C.
Northern Pacific Railway Company	I. C. C.	1896	I. C. C.
Pennroad Corporation.....................	1931	1929	I. C. C.
Pennsylvania Railroad.....................	I. C. C.	1846	I. C. C.
Southern Pacific Company.................	I. C. C.	1884	I. C. C.
United Aircraft & Transport Corporation.....	1929	1929	Yes

AUTOMOTIVE

Continental Motors Corporation............	1911	1917	Yes
Ford Motor Company of Canada...........	1904	1904	Yes
General Motors Corporation...............	1918	1916	Not stated
Nash Motors Company....................	1931	1916	Yes
Packard Motor Car Company..............	1913	1909	Yes
Studebaker Corporation...................	1911	1911	Yes
Willys-Overland Company.................	1912	1912	Yes

METALS

American Smelting & Refining Company.....	1912	1899	Yes
Anaconda Copper Mining Company	1903	1895	Not stated

	Independent audits began	Company organized	Independent audits for subsidiaries
Bethlehem Steel Corporation	1905	1904	Yes
Calumet & Hecla Consolidated Copper Company	1918	1923	Yes
International Nickel Company of Canada, Ltd.	1902	1902	Not stated
Nevada Consolidated Copper Company	1908	1908	Yes
United States Steel Corporation	1901	1901	Yes
Oils			
Consolidated Oil Corporation (formerly Sinclair Consolidated Oil Corporation)	1917	1932	Yes
Continental Oil Company	1920	1920	Yes
Phillips Petroleum Company	1917	1917	Yes
Standard Oil Company of Indiana	No independent audit	1889	Generally not
Standard Oil Company of New Jersey	No independent audit	1892	Generally not
Tide Water Associated Oil Company	1926	1926	Yes
Foods			
Borden Company	1910	1899	Yes
General Foods Corporation	1919	1929	Yes
National Dairy Products Corporation	1923	1923	Yes
Standard Brands, Incorporated	1929	1929	Yes
Swift & Co.	1913	1885	Yes
United Fruit Company	1919	1899	Yes
Chemicals			
Commercial Solvents Corporation	1920	1920	Yes
E. I. du Pont de Nemours & Co.	1910	1915	Yes
Texas Gulf Sulphur Company	1919	1909	Yes
Union Carbide and Carbon Corporation	1921	1917	Yes
Communications			
American Telephone & Telegraph Company	1880	1880	Two, others under I. C. C.
International Telephone & Telegraph Corporation	1920	1920	Yes
Radio Corporation of America	1919	1919	Yes
Unclassified			
American Locomotive Company	1912	1901	Yes
American Radiator & Standard Sanitary Corporation	1929	1929	Yes
American Superpower Corporation	1923	1923	No subsidiaries
American Tobacco Company	No independent audit	1890	No
Atlas Corporation	1929	1929	Yes
Chase National Bank	No independent audit	1877	No
Curtiss-Wright Corporation	1929	1929	Yes
Drug, Incorporated	1928	1928	Yes
Eastman Kodak Company	1898	1901	Yes
General Electric Company	1898	1892	Yes
B. F. Goodrich Company	1912	1912	Yes
Goodyear Tire & Rubber Company	1910	1898	Yes
Guaranty Trust Company of New York	No independent audit	1896	Not given
International Harvester Company	1907	1881	Yes

	Independent audits began	Company organized	Independent audits for subsidiaries
Pullman Incorporated	1927	1927	Yes
Sears, Roebuck & Co.	1906	1906	—
Transamerica Corporation	1929	1929	Yes
United States Rubber Company	1898	1892	Yes
Warner Bros. Pictures, Inc.	1923	1923	Yes
Westinghouse Electric & Mfg. Company	1907	1872	Yes

Capital Flexibility

By A. C. Littleton

During the recent cycle of inflation and deflation the capital problems of corporations have been emphasized in many ways. The asset write-ups and stock dividends of the '20's and the asset write-downs and reductions of stated capital of the '30's, as well as numerous other practices, were for the most part attempts to harmonize inflexible capital and changing asset values.

But this apparent search for flexibility has not gone forward without criticism. Abuses have been perceived which raise questions of doubt concerning the desirability of continued departures from the older methods of financing. For example, many corporations themselves are beginning to question the efficacy of no-par stock. And yet the objective of capital flexibility in itself still seems desirable.

. . . . .

Note the background of the term "capital stock." That part of the owner's property which was active in his business affairs was at first very probably recorded (if at all) in a simple personal account—a credit to some sort of "master's account" by the slave or agent who was responsible for attending to business affairs. From the agent's point of view he "owed" the master for the sum entrusted; the master saw only a sum of money working in his behalf. To the latter this would be his "principal sum" and as the adjective came to be used elliptically as a substantive it would be thought of as his "principal." If the term had in this form been attached to his account, the title might be expected to have become "master's principal." When we see that the old Latin root word for the adjective "principal" was *caput* (head) and that this word evolved into the mediæval Latin *capitalis* and into the mediæval Italian *cavedale*, and finally into the English *capital*, it is not hard to convince ourselves that "master's capital" or "John Jones, capital" probably grew out of such a past.

Shift the scene to the seventeenth century. The trading companies, such as the East India Company and others, developed a species of enlarged partnerships. Each participant contributed from his stock of goods. The united contributions constituted a stock of goods which were owned jointly by the participants, in other words, a "joint-stock." Soon therefore "cash debitor to stock" was a typical opening entry. (For example, Dafforne, Merchants Mirriour, 1634, and Monteage *Debtor and Creditor Made Easie*, 1690.) "Stock" was here *representative* of the goods or economic capital held in joint-stock.

Presently the two terms crept together. For example, an act of parliament in 1697 regarding the Bank of England (8 & 9 W & M c. 20) mentions "the common, capital, and principal stock of the said Governor and Company ——." At present the combined terms "capital stock" are in constant use, but we seldom appreciate their inconsistency. "Stock" originally referred to the goods themselves and "capital" to the proprietor's principal sum (ownership in the goods). Yet combine these apparent opposites in a modern business corporation and we have still a third idea—a legal margin contributed by the shareholders for the protection of creditors. Today we often drop the noun "stock" and use the adjective "capital" to mean such diverse things as (1) the assets themselves, (2) the net worth of the proprietor, (3) the legal measure of the limit of dividends.

Obviously there are broad possibilities here for confusion of thought and action. But the more important matter for the present purpose is the thought that never in the long development of organized business and of accounting for business capital has there been any deviation from the principle that the capital account recorded the contribution made by the stockholders—never, that is, until quite recently.

Recent corporation practice in the United States, under the influence of factors, such as a greatly accelerated vogue for the corporate form for doing business, an increased appetite since world-war finance drives for security investments and the relative freedom from restraint which came in with no-par stock, etc., has evolved the doctrine of stated capital under which the directors or stockholders designate a portion of the contribution to be the creditor's margin and retain unrestrained control over the disposition of the remainder of the contribution as if it were accumulated profits.

This is a revolutionary departure from the conception which has persisted throughout a long evolution.

But a revolutionary practice should not be condemned on the ground that nothing new can be good. On the other hand mere novelty should not recommend a practice on the ground that everything old is inadequate for modern conditions. The use of a new idea in practical affairs should not alone constitute a sufficient endorsement, nor should the existence of abuses constitute sufficient reason for the abolition of a practice which has inherent merit. But anything which is as revolutionary as the doctrine of stated value does call for thoughtful appraisal.

Several alternatives suggest themselves at once. We could go back to the traditional conception of capital stock as the whole contribution and thus be free of stated value. We could also abandon entirely the idea of a fixed sum, however determined, as a margin for creditors. The first would be equivalent to a repudiation of recent developments and would require the restriction of many current practices. The second would be equivalent to accepting the revolution as progress and extending it to its logical sequel.

If we are to hold to the idea that capital stock represents the whole of the stockholder's contributions, it probably would not be necessary to abandon no-par stock entirely. No-par is much too useful to be legislated out of existence merely because it may be open to some abuse. No-par stock should be retained for the sake of its flexibility as an original issue, if for no other reason.

Restriction is needed, however, for stated capital in both original and subsequent issues. If the whole-contribution concept is to prevail, the stated-value concept must give way; the two are so antagonistic as to be irreconcilable. Therefore, any statute requiring the whole consideration for an issue of no-par stock to be credited to capital-stock account must also prohibit stated value. This will necessitate allowing complete latitude in the price at which the stock is to be issued.

The use of any statutory minimum price for stock issues would also constitute a failure to recognize the fact that there is no relationship whatever between the number of shares and the value of the property. In a sense a statutory minimum price constitutes an equivalent of par value as well as an invitation to establish a "stated capital" by resolution of the directors. If a minimum price for stock issues is included in the laws in an attempt to protect the investor against fraudulent stocks, this sort of protection could more properly be attempted through so called "blue-sky laws" which would classify shares as types of investments.

Another corollary to the fact that the number of owners can not affect the value of the property is that complete freedom should exist to increase or decrease the number of shares outstanding, by stock split-ups and recombinations, and openly to issue shares for intangibles and promoters' services. There would be little objectionable in these practices provided the public were given unmistakable notice of the facts.

In the case of subsequent issues of no-par stock under a statute requiring the whole consideration to be credited to capital-stock account, there might be a question whether this would not constitute an impairment of the rights of existing stockholders in the accumulated surplus. Since every share of common stock new or old is an undivided interest in the net worth, it might be argued that part of the purchase price was paid for an interest in the past surplus and therefore was not a proper credit to capital account. But since a credit to paid-in surplus or to earned surplus of a part of a capital contribution would be still more objectionable, the common-sense thing to do is to ignore the hair splitting and credit the whole consideration to capital. It may reasonably be presumed that the stockholders have voted on the question of the new issue and it will no doubt be agreed that the ability and the will to see in the proposal a dilution of existing equities can not be created by statute.

Perhaps these modifications and restrictions of no-par stock practice would not be sufficient to re-establish the principle of treating the whole contribution as capital. Recent developments away from a strict adherence to this earlier concept of capital stock may indicate a trend which is real progress. If this be true, then it would be a mistake to attempt to defeat progress in order to hold to the merely traditional.

Yet the issue may be deeper than the old and the new, the traditional versus the progressive. Under the earlier practice corporation finance was principally called upon in the formation of a new grouping of capital—the creation of a corporation where none existed before. Under more recent conditions corporate finance activities have been much more commonly directed toward merging existing corporations and re-arranging the capital structure of going concerns. The older problem was mainly one of assembling aggregates of limited liability capital under one management and issuing documentary evidences of the contributions. The newer problem is related to "values," to the growing consciousness that a corporation is being constantly "appraised" in the security markets, that its securities draw their value primarily from earning power, that assets are valuable only according to the earnings they produce. The modern problem of finance therefore is to try to maintain a reasonable degree of agreement between a naturally fluctuating element (value of assets) and a naturally rigid element (limited liability capital obligations). Hence the search for flexibility of capital which seems to be behind most of the capital problems of today.

These considerations suggest that a capital flexibility for corporations which would approach the flexibility of proprietor's capital might be desirable, provided the creditors of limited liability companies were given suitable protection, for creditor protection is still necessary if business on credit is to continue unabated.

The minimum margin of protection has heretofore been the capital-stock account representing either the whole contribution or a designated part of it. But in any event the capital has been a fixed sum. Obviously flexibility of capital and a fixed sum of capital are incompatible. So the question appears whether the creditors might not be given satisfactory protection without the use of a fixed sum of capital as a margin. If this were accomplished it should have the effect of making the capital structure more flexible so far as stock and surplus were concerned.

Assume the following legal restrictions upon corporate capital stock:

1. In lieu of a fixed sum as a margin for creditors, the corporation shall pledge itself not to allow the relationship between the total indebtedness (including preferred stock) and the reasonable value of the total assets to fall below a percentage which the corporation's charter agrees to maintain.

2. All preferred stock must have a par value expressing the liquidation preference in assets, is to be cumulative, callable, non-participating and preferred as to income (in order to exclude border-line cases which are closer to common stocks).

3. All common stock of whatever class must be without par value and may be issued for any consideration satisfactory to the directors and stockholders.

4. The creditors (including preferred stockholders) shall have the right to elect a certain number (minority) of directors annually.

5. Upon the failure of the corporation to maintain the specified ratio of assets and indebtedness, the creditors (including preferred

stockholders) shall immediately have the right to elect a majority of the directors.

6. Insolvency and the usual seizure through the courts of assets specifically pledged would follow upon the failure to pay interest or principal on a bond when due, as at present.

If the assumed restrictions were in force the following would be some of the expected consequences:

1. A plainer recognition of the principle that all suppliers of capital differ from one another only as to the terms of their "capital-contract" and that the corporation should be managed with the interests of all parties receiving consideration.

2. The creditors through their representatives on the board of directors would have a voice in the management and direct knowledge of current plans and policies. This representation, with the enforced maintenance of a definite ratio of assets and debt and the conditional right to control the policies, would be an effective substitute for a fixed sum margin and the so-called trust-fund doctrine of capital stock.

3. With the creditors thus better protected than at present common-stock account and surplus could be made as flexible as an individual proprietor's capital account. The legal necessity for distinguishing between common stock and surplus would disappear; a single "net-capital account" would suffice.

4. The "net-capital account" would be a true net worth account, a real indication of residual proprietorship, fluctuating as proprietorship fluctuated, subject to increase or decrease in the number of "participation certificates" as the holders saw fit and to such withdrawals or "assessments" as the directors, representing all suppliers of capital, should decide.

5. Although sub-accounts would be desirable for accounting purposes, a single account could suffice. It would be credited with:

Original contributions
Profits earned
Capital gains realized
Appreciation write-ups

It would be debited with:

Asset losses sustained
Asset write-downs
Dividends declared
Reserves transferred to special accounts

In the past, creditors' margin was the whole sum contributed by the stockholders; at present the tendency is toward a director-designated portion of the contribution, apparently in the search for greater flexibility of proprietary capital. The proposal here outlined increases the real protection of all classes of creditors and at the same time increases the flexibility of proprietary capital accounting and management. On the surface that would seem to be a desirable accomplishment.

Accounts of an Oil Company

V

By H. G. Humphreys

Probably the most interesting problems to the accountant are those that arise in the finding of costs of refined products. In later paragraphs these "costs" will be discussed in three divisions: (a) refinery department, (b) lubricating department, (c) natural gasoline department.

As a preliminary, that may make for clearer understanding of the accounts later to be introduced, I shall touch briefly on some of the procedures and terms used in the oil-refining business.

Petroleum refining

Petroleum consists of about 84 per cent. by weight of carbon with 12 per cent. of hydrogen, and varying proportions of sulphur, nitrogen and oxygen.

In the first operation, the crude oil is fractionally distilled so as to separate it at normal boiling points into wet gas, gasoline, kerosene, gas oil, fuel oil, etc. Some of the products are later purified by chemical treatment.

The cracking process, wherein gas oils and fuel oils form the main charging stock, consists in distilling the oils at a higher temperature than the normal boiling point of the constituents to be decomposed (cracked). This is usually brought about by a distillation under pressure. Wet gas, pressure distillate and heavy bottoms—the latter being mostly of the consistency of fuel oil—are produced in the cracking process. Pressure distillate is from 25 to 50 per cent. of the charge. The pressure distillate is further processed and is found to contain ordinarily about 95 per cent. of gasoline and 5 per cent. residuum. The latter can be recharged to the cracking still. An innovation that has awakened much interest is the hydrogenation process. As we understand it, this new process will occupy the "clean up" position in the batting order. After the other processes have had their innings and taken out all the lighter products within their power, leaving only the heavy ends, hydrogenation gets into action by introducing hydrogen into the heavy residues and converting them into lighter hydrocarbon products, such as gasoline, etc.

It might be mentioned at this point that a modern refinery is capable of recovering from 60 per cent. to 80 per cent. gasoline from a barrel of high grade crude oil. With the addition of the hydrogenation process the percentage of gasoline yield would be tremendously increased. This prospect, considered with the complete capture of available casinghead gas and other wet gas, for conversion into gasoline, would seem to insure an ample gasoline supply were the present crude oil production much less than it actually is. However, with bottled drinking water at present commanding a higher price than gasoline, we shall have to wait a while before we see hydrogenation in extensive use.

Gravity and volume corrections

It is easy to look at a clock and read the time, but it is not easy to explain in technical terms why the hands go around their course so accurately. It is also easy to read temperature as registered on a thermometer or gravity as registered on a hydrometer. But the measure of oils and products, generally speaking, must be corrected both in respect of gravity and temperature as read, so that the resulting figures will represent correct degrees of gravity and corrected volume, as though the oil measured were actually taken at 60 degrees Fahrenheit. They whose duty it is to make these corrections develop in course of time an intuitive facility in determining correct results.

To obtain complete information on this subject, one should read the various publications issued by the United States bureau of standards, the American Society for Testing Materials, the American Petroleum Institute, as well as the books that are issued by the makers of hydrometers.

For present purposes I shall merely illustrate the factors involved in these computations.

The following abridged table shows the comparison of the specific gravity scale, API gravity scale and Baumé gravity scale for fluid lighter than water, under which practically all petroleum and its fluid products fall:

	Specfic gravity	API gravity	Baumé gravity
*Distilled water (standard of comparison—at 60° F. and 760 MM. barometric pressure)	*1.0000	10	10
	.9340	20	19.90
	.8762	30	29.78
	.8498	35	34.82

	Specific gravity	API gravity	Baumé gravity
$\text{Degrees API}=\dfrac{141.5}{\text{Spec. grav.}}-131.5$	.8251	40	39.72
	.7796	50	49.58
	.7389	60	59.48
$\text{Degrees Baumé}=\dfrac{140}{\text{Spec. grav.}}-130$	.7165	66	65.40
	.6690	80	79.27
	.6388	90	89.17
	.6112	100	99.07

For liquids heavier than water, the Baumé gravity scale is used. The following is an abridged table:

	Specific gravity	API gravity	Baumé gravity
*Distilled Water (standard of comparison at 60° F. and 760 MM. barometric pressure)	*1.0000	(No API scale for heavy liquids)	0.000
	1.0069		1.000
	1.0140		2.000
	1.0211		3.000
	1.0284		4.000
$\text{Degrees Baumé}=145-\dfrac{145}{\text{Spec. grav.}}$	1.0357		5.000
	1.5263		50.000
	1.9333		70.000

A brief example of a gravity temperature correction table is appended:

Observed temperature degrees Fahr.	Hydrometer—Observed degrees of gravity (tenths omitted)				
	30	40	60	70	80
	Observed degrees corrected to degrees at 60° F.				
30	32.0	42.4	63.6	74.3	84.9
40	31.3	41.6	62.4	72.8	83.2
60	30.0	40.0	60.0	70.0	80.0
70	29.3	39.2	58.9	68.6	78.4
80	28.7	38.4	57.8	67.4	76.9

A complete table would give each degree of temperature from 0 to 125 and each observed degree of gravity from 10 to 99, with a rule for interpolating corrections in respect of tenths of observed degrees of gravity.

The table given below will serve to illustrate the method of determining the correct volume at 60° F. of a given volume of oil measured at a different temperature:

At 60° F.				Observed temperature—degrees Fahr.				
				30	40	60	70	80
*Coefficient of expansion		Grav. group	Grav.	Volume correction Multiply measured volume by				
*Applicable to certain gravity groups.	0.0004......	1	30	1.0120	1.0080	1.0000	0.9960	0.9921
	0.0005......	2	40	1.0149	1.0099	1.0000	0.9951	0.9901
	0.0006......	3	60	1.0181	1.0121	1.0000	0.9939	0.9879
	0.0007......	4	70	1.0211	1.0141	1.0000	0.9929	0.9858
	0.0008......	5	80	1.0240	1.0160	1.0000	0.9919	0.9838

A complete table would give each degree of observed temperature from 0 to 203. Among other tables used is that which gives API gravity equivalent of specific gravity with corresponding weight in pounds per U. S. gallon.

Casinghead (wet) gas

Casinghead gas is a valuable contribution to the petroleum market. Approximately 30 per cent. of this gas, by volume, is converted into various grades of natural gasoline, some of which may be used as a special motor fuel and some combined with refinery gasoline to form a motor fuel for ordinary consumption. Since so much gasoline is obtainable from wet gas, it is apparent that this as well as gasoline from crude oil must be considered in determining the minimum gasoline production commensurate with current demand for that commodity.

The lighter components of the gasoline extracted from wet gas yield butane, propane, solvents, etc., etc. Butane is a gas supplied chiefly to small towns for light and fuel; propane is the liquid gas which is supplied in cylinders for heating purposes; solvents are used as a compounding medium in the manufacture of rubber, vegetable compounds, etc.

The remaining 70 per cent. is dry gas which may be used as fuel or burned into carbon black.

There has been a deplorable waste of casinghead gas, or gas produced with the oil from oil wells.

Casinghead gas is usually bought under contract. "Seller" is the owner or lessee of an oil and gas producing property. "Buyer" is the owner of a natural gasoline plant.

Delivery is made at seller's vapor-tight flow tanks and/or gas traps and/or casingheads of the oil wells. By agreement, buyer may install equipment for saving vapors, which are considered casinghead gas.

Buyer may decline casinghead gas below a given gasoline content and also flush production of such gas in excess of his plant capacity to absorb.

Buyer usually returns free to seller residue dry gas for the operation of seller's property, but not in excess, however, of the dry gas returnable as determined in accordance with the standard table of the Natural Gas Association of America, which shows the percentage of casinghead gas returnable as residue after deducting the volume consumed in gasoline extraction and plant operation. The richer the casinghead gas in gasoline content, the smaller the percentage of dry gas. For example:

Gasoline content of wet gas per M. cu. ft. gallons	Residue gas returnable per cent.
.75	85.75
1.75	75.50
2.75	65.75
15.00	10.80

Seller pays for dry gas delivered him by buyer in excess of the quantity to which he is entitled as measured according to the standard table. And, as often happens, should buyer sell unutilized dry gas, he pays to seller 50 per cent. of the amount realized from such sale. The 50 per cent. of realization is calculated on the proportion which the volume of surplus residue gas available for sale from casinghead gas delivered by seller bears to the total volume of surplus residue gas available for sale from casinghead gas delivered to buyer's plant from all sources within the period involved.

The gasoline content is determined by a field compression test in accordance with the official code, specifications and procedure of the N. G. A. A. for such purposes. Tests are made quarterly or at the demand of either party on notice, as provided.

The casinghead gas delivered is usually measured by an orifice meter which is furnished, installed and kept in repair by buyer. Meters are tested on the demand of either party. A registration within 3 per cent. of correct is considered correct. On request, buyer sends seller meter charts for perusal and return.

Buyer pays seller a price per thousand cubic feet computed according to the following standard price schedule:

Realized average price per gal. of gasoline—cents	Gallons per M. cubic feet		
	Less than .75	.75 to 1.74 incl.	1.75 and over
	Per cent. of the average value of gasoline		
2 or less	5%	10%	15%
2⅛ to 3⅞	10%	15%	20%
4 to 5⅞	15%	20%	25%
6 and over	20%	25%	33⅓%

Provision is made for the termination of the contract when the supply of casinghead gas declines to an unprofitable volume.

Tests

Accountants who are desirous of learning something concerning tests might obtain a booklet from a laboratory concern that specializes in testing petroleum products. In a plant that turns out quality products the physical and chemical tests are many and bewildering.

The distillation test is the most important in determining the quality of gasoline, since it shows how it will perform in an internal combustion engine. Here is found the point at which the lightest elements of gasoline begin to boil—the initial boiling point; also the highest temperature reached in distilling the gasoline—the end point. The intermediate performance of gasoline under this test is important in determining the degree of constancy in vaporization compared with specification requirements.

With the "doctor" test it is found whether the gasoline is sweet or sour.

The percentage of bottom sediment and water in crude and fuel oil (oil being lighter than water) is determined by a centrifugal test which throws the heavy elements to the bottom of the testing flask.

Viscosity is the term which denotes the body or cohesiveness of a liquid—the resistance which it offers to flow, like molasses.

Flash point is the temperature at which there is enough gas given off of the volatile liquid to cause a small flash to shoot across the surface of the liquid, on passing a small flame over the liquid as the temperature increases.

Fire point is the temperature at which the oil will burn without extinguishing. Furthermore, there is the cold test to determine the temperature at which the oil ceases to flow; the test to determine the temperature at which wax will melt; the test to learn how long an illuminating oil will burn (a good kerosene will burn 18 hours steadily without clouding the chimney or forming incrustations on the wick); the corrosion test to determine whether or not the gasoline will corrode carburetor and cylinders; the calorific test, especially for fuel oil, to learn the heating value—B T U per pound—the heat required to raise one pound of water one degree from 32 degrees Fahrenheit; the sulphur test for fuel oil; the penetration test on asphalts and greases by which is learned the point at which the latter becomes an oil, at least for excise-tax purposes; and so on.

Octane numbers

The following is given by permission of the copyright owner, so to speak:

In the internal combustion engine automotive engineers try to approach the even gradual increase of power such as found in steam engine performance. The power produced by steam is by expansion, while in an internal-combustion engine the power is produced by explosion.

Internal-combustion engine performance approaches the desired objective by being fed a slow burning (exploding) fuel. Refiners accomplish this by high heat treating, or adding some material such as ethyl, which lowers the hydrogen carbon ratio. Reduction of hydrogen content makes a slower burning fuel. We speak of it as being more refractory.

Automotive engineers try to develop an engine which has less weight per horse power, which means lower cost. They also want a fuel which will perform without knocking. Knocking indicates a loss of power and is detrimental to smooth performance. Reducing the size of the engine is primarily a sacrifice of power, which has been compensated by the introduction of high compression ratios (7–1, 8–1, etc.). The ability of the fuel to withstand high compression without prematurely breaking down (knocking) is determined by a testing engine which measures the burning qualities of the fuel.

A reference fuel is made by mixing normal heptane and iso-octane which have known constant characteristics. The properties of normal heptane are such that it is a bad knocking fuel; iso-octane resists knocking. These two fuels are blended so as to give the same degree of knock as the fuel to be tested. The comparison is made by alternately using the heptane-octane mixture and the fuel being tested. The percentage of normal heptane added to iso-octane to give the same knocking rate as the fuel under investigation is what is known as the octane number. Seventy octane would be a mixture of 30 per cent. normal heptane and 70 per cent. iso-octane.

The testing engine goes to compression ratios which are much higher than those of commercial automotive engines and make the fuel knock—otherwise there would be no yardstick.

Costs

Refinery department

On succeeding pages will be found the following described statements and memoranda:

1. Summary of income
2. Daily plant records
3. Plant expense
4. Cost of deliveries
5. Account of stocks
6. Market prices
7. Operations by processes
8. Processing summary

The figures given in the statements are intended for illustrative purposes only and do not represent true values in any sense.

Let us consider these costs under three heads: (1) in which only partial information as to stocks is available; (2) where there is a daily control of stocks; (3) where stocks are controlled and costs apportioned over processes.

It is probably true that many of the small refineries are in class 1. In such cases, one would probably learn that the primary purpose of the management was to keep the men profitably employed; "Why keep unnecessary books?" However, a monthly statement is called for and the accountant will, at least, be able to obtain sufficient information to make up an account like statement 1—summary of income given herewith, except that it will be necessary for him to combine the gallonage of refining loss and stock variation. He might go further and build up a statement by products as in columns 8 to 19 of statement 5 herewith, thus:

	Products	
	Gallons	Cost
Closing inventory	X	X
Deliveries	X	X
Total	X	X
Deduct:		
Opening inventory	X	X
Purchased products	X	X
Total	X	X
Plant yield and cost	X	*X
Add:		
Processing and storage loss	X	
Crude oil run	X	X
Operating and maintenance		X
Depreciation		X
Direct departmental expense		X
Production cost, as above		*X

This being a monthly statement, to trace an excessive gallonage loss might entail considerable work, possibly with no success.

In case 2 there is a complete set of stock records, as described in memorandum (2) daily plant records. Processing figures are carefully audited and figures of transfers between products are acknowledged by the plant superintendent. Losses from processing and stock variations are developed separately under this system and are ascertained daily. The figures given in statement (1) summary of income have, for present purposes, been developed according to this system, which is believed to be fully explained in the accompanying statements and memoranda 2 to 6 inclusive. In column 15 of statement 5 the dollar values of opening inventory and purchases plus costs for the period have been combined and apportioned in ratio to average market prices for the period, as given in statement 6. Some will contend that the prices for such apportionment should be the average for a six-months' period. Others will contend that the costs should be apportioned on different bases—one for crude oil, one for direct expenses, one for utility and general expense and opening inventory as previously valued.

Since no two refineries are alike and crude oil is of varying quality and the manufacturing policy is necessarily based on conditions as they are, the accountant must use his best judgment with his individual problem. Whatever change he would desire could be accomplished by a breakdown of the costs as given in column 15 of statement 5. But the managing director comes into the picture and says that all the figures are very pretty; they account for the stocks and they develop an acceptable valuation of products for balance-sheet purposes—but they are of no value otherwise. Let us tackle case 3.

All the figures necessary for case 3 are furnished in case 2. The first thing to find out is whether the concern has a specific objective or merely produces more or less haphazardly. Let us assume that the policy is to produce as much kerosene as is necessary to meet current demand and as much gasoline as possible; regarding the inevitable lower ends as by-products. We first make proper arrangements for charging direct expense to each respective process and to apportion utility and general expense equitably over processes. The monthly figures of "consumed," "produced" and "processing loss" are available from the records as described under process unit No. X given in statement—memorandum 2. These figures are entered in statement 7, as well as the cost of crude oil consumed and the expenses of each process. Now we are to value the by-products that have been consumed and the by-products produced from each process as per statement 7. On consulting the managing director he requests development of a set of figures that will tell him as to each process how much the market value of products consumed plus expenses was increased by the resulting products priced at market value. This is his yardstick of economic efficiency. Statement 7 gives the result and statement 8 is a summary of statement 7. It will be seen that the applied principle works out thus as to costs:

Market value of commodities consumed.......................	
Actual expenses..	
Total...	

Less: by-products at market prices..........................	
Cost of main products apportioned in ratio to respective market prices....................................	

Why operate a process if the market value of consumed material plus expenses exceeds the production at market value?

The stock ledger would contain the opening inventory of each account. Entries for the month would be the production and consumption as per statement 8. Purchases would be recorded at cost. Transfers between products would first absorb opening inventory value and the remainder would be valued as per the month's cost, respectively. Stock variations would be posted in quantities only. The total at this point would be ascertained as to each stock account—gallons, per gallon, dollars. This "per gallon" figure would be applied to deliveries and closing inventory and the balance of each product account would be carried forward unchanged. For balance-sheet purposes the value per gallon would be the cost record figure or market, whichever was the lower; the adjustment would not affect cost of deliveries per cost record but would be given effect in the general profit-and-loss account.

Refinery Department

(1) *Summary of Income*

(In the financial statement combining all departments, depreciation would be shown in the last deduction position)

	Price	Gallons	Dollars	Statement reference
Direct wholesale sales:				
Ethyl gasoline..................................	.07	8,500	$ 595.00	
No. 2 "	.05	8,000	400.00	
No. 3 "	.04	7,500	300.00	
		24,000		
Kerosene..................................	.03	400	12.00	
Distillate..................................	.025	300	7.50	
Fuel oil..................................	.012	10,000	120.00	
		34,700	$1,434.50	
Deduct—outage allowances		100	6.00	
Total sales..................................		34,600	$1,428.50	
Cost of sales:				
Crude oil plus pipage (1,000 barrels)............		42,000	$ 840.00	
Refining loss (43 barrels)........................		(1,806)		
Operating and maintenance....................			512.35	
Depreciation..................................			185.35	
Direct departmental expense....................			10.00	

	Price	Gallons	Dollars	Statement reference
Production costs (957 barrels)		40,194	$1,547.70	8
Opening inventory at cost		108,562	2,510.00	
Storage variation (28 barrels)		(1,176)		
Purchased products at cost		46,620	168.00	
Costs to be accounted for		194,200	$4,225.70	5
Deduct: transfers at cost—				
To marketing department		24,000	$ 857.50	4
To operations		26,000	207.35	4
Closing inventory at cost		109,500	2,210.25	5
Total deductions		159,500	$3,275.10	
Cost of sales		34,700	$ 950.60	4
Shipping and transportation expense			20.00	
Proportion of selling expense			100.00	
Proportion of general expense			10.00	
Total costs and expenses			$1,080.60	
Net income for the department			$ 347.90	

Ratios:	Per cent	Per gallon	Per gallon gasoline
Cost of sales	66.55	$.0274	....
Shipping and transportation	1.40	.0006	....
Selling expense	7.00	.0029	$.0042
General expense	.70	.0003	....
Net income	24.35	.0100	....
Sales	100.00	$.0412	

(2) *Daily Plant Records*

Of primary importance is a complete record of stocks by individual commodities for each day and for the month to date. The following will illustrate the ordinary method of control:

Stocks on hand, 7 A. M. previous day:	Barrels
Received in plant—	
Crude oil	do
Purchased products	do
Total	do
Deduct: deliveries, per loading report	do
Plant consumption	do
Total deductions	do
To be accounted for, 7 A. M. today	do

By means of pumping reports and miscellaneous plant data, the plant office compiles a performance analysis each day for entry into a record such as described below (process unit No. X), the record containing a separate sheet for each process. The column for "processing loss" develops a difference in each case which should compare favorably with the standard variation allowance; large discrepancies would be investigated and corrected, or explained under "remarks." At the same time, figures are developed to represent transfers from product to product within the plant for the day. With this information in hand, together with stock movements to and from the plant, the plant accountant is now ready to compile his daily report (for the day and month to date) in substantially the form of statement (5) account of stocks given herein—barrels only.

At the close of the month, the plant office would fill in all the figures, as to average gravity, percentage, barrels and gallons, in forms (7) operations by processes and (8) processing summary.

The storage variations (statement 5 column 6) are due chiefly to temperature variations. All stocks are corrected to 60° F. at the close of each month. Receipts and deliveries are likewise corrected as they occur.

PROCESS UNIT NO. X

Performance for the month ended 7 A. M. February 1, 19—

Horizontal classification:
- Cycle no.—
- Hours on stream
- 24 hours to 7 A. M. (vertical—2nd day to 1st of following month)
- Consumed—
  - Column for each commodity—barrels, per cent. of total, gravity
  - Total barrels
- Produced—
  - Column for each product—barrels, per cent. of total, gravity
  - Processing loss—barrels
  - Total barrels (as above)
- Laboratory memo.—gasoline content of product, etc.
- Remarks

Foot of sheet:
- Totals—consumed and produced—barrels, per cent. of total and average gravity
- Cycle record—day, hour, minute

Cycle No.—	Time on charge—hours and minutes
Charge started	Time on stream—hours and minutes
Stream started	Time idle— hours and minutes
Stream ended	Remarks
Cycle ended	

(This form would probably cover any process; but many processes would not require such an elaborate form.)

(3) *Plant Expense*

Classification	*Dollars*
Fuel	$287.35
Operating labor	150.00
Chemicals and supplies	50.00
Repair labor	5.00
Repair material	5.00
Superintendence	5.00
Insurance	5.00
Taxes	5.00
Direct departmental expense	10.00
Depreciation	185.35
	$707.70

The above is assumed to be the total column of the expense analysis. The actual analysis would be divided into three groups: (a) processing (b) utilities (c) general plant. Processing would consist of direct classified expenses to each process. The direct expense to each utility would be classified. Each general plant account would likewise be separately charged according to classification.

After full discussion with plant superintendent and assistants, bases would be determined whereby utilities expense and general plant expense would be equitably apportioned over processes, each of the latter accounts ultimately bearing its direct expense plus its share of overhead.

Auxiliaries (14 column) would be maintained, having a separate classified sheet of performance (where applicable) and expenses for each subdivision of (a) (b) and (c). Obviously, inordinate variations would be readily detected.

Large plants equalize monthly charges for repairs through the medium of a reserve account to which actual expenses are charged, the balance being adjusted at the end of the year, according to conditions then known.

(4) *Cost of Deliveries*

(Prices as per statement 5—column 14)

Products	Prices	Total		Direct wholesale sales		Transfers to marketing dept.		Used in operations	
		Gallons	Dollars	Gallons	Dollars	Gallons	Dollars	Gallons	Dollars
1. Gasoline	$.046	17,000	$ 782.00	8,500	$391.00	8,500	$391.00		
2. "	.033	16,000	528.00	8,000	264.00	8,000	264.00		
3. "	.027	15,000	405.00	7,500	202.50	7,500	202.50		
8. Kerosene	.020	400	8.00	400	8.00				
13. Residue gas	.008	21,000	167.35					21,000	$167.35
14. Distillate	.017	300	5.10	300	5.10				
17. Fuel oil	.008	15,000	120.00	10,000	80.00			5,000	40.00
		84,700	$2,015.45	34,700	$950.60	24,000	$857.50	26,000	$207.35

(5) *Account of Stocks—Sheet 1–2*

Products	Processing: Produced barrels	Processing: Consumed barrels	Transfers—product to product: To barrels	Transfers—product to product: From barrels	Total Barrels	Storage variations over (short) barrels	Net plant yield: Barrels	Net plant yield: Gallons	Opening inventory Gallons	Purchases Gallons
1. Ethyl gasoline	300				300	(12)	288	12,096	14,204	
2. Gasoline	400	300	250		350	10	360	15,120	5,280	
3. Gasoline	300		250		550	(10)	540	22,680	3,720	
4. Light gasoline	312			500	(188)	(10)	(198)	(8,316)	2,916	8,400
5. Raw gasoline	250	250							9,200	
6. Raw gasoline	232	232							9,200	
7. Raw light gasoline	530	530							9,400	
8. Kerosene	90			80	10		10	420	80	
9. Kerosene distillate	100	100	80		80		80	3,360	1,340	
10. Treated pressure distillate	250	250							2,000	
11. Pressure distillate	250	250							5,000	
12. Wet gas	120	980			(860)		(860)	(36,120)		36,120
13. Residue gas	500				500		500	21,000		
14. Distillate (furnace oil)	10	20		50	(60)		(60)	(2,520)	2,920	
15. Gas oil	250	50		50	150	(10)	140	5,880	4,520	
16. Topped crude	380	50		50	280	(10)	270	11,340	7,560	
17. Fuel oil	440	150		50	240	10	250	10,500	5,400	
18. Recracking stocks	135	750	200		(415)	4	(411)	(17,262)	24,862	2,100
19. Pitch	20				20		20	840	960	
	4,869	3,912	780	780	957	(28)	929	39,018	108,562	46,620
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

	Column	Gallons
Closing inventory	18	109,500
Deliveries	16	84,700
Total	11	194,200
Deduct—purchases	10	46,620
Opening inventory	9	108,562
Total		155,182
Net plant yield (8)	8	39,018

Purchases	Gallons	Dollars
Light gasoline	8,400	$168.00
Wet gas—gallon equivalent	36,120	No Cost
Recovered from various sources other than cracking stills (See process 111)		
Recracking stocks	2,100	No Cost
Slop oil recovered		
Total, per statement (1)	46,620	$168.00

(5) *Account of Stocks—Sheet 2-2*

Products	Opening inventory plus purchases and net plant yield valued at average market prices for the period			Apportionment of costs in ratio to market as per column 13		Cost of deliveries		Closing inventory	
	Gallons	Per gallon	Dollars	Per gallon	Dollars	Gallons	Dollars	Gallons	Dollars
1. Ethyl gasoline	26,300	$.070	$1,841.00	$.046	$1,222.60	17,000	$ 782.00	9,300	$ 440.60
2. Gasoline	20,400	.050	1,020.00	.033	677.37	16,000	528.00	4,400	149.37
3. Gasoline	26,400	.040	1,056.00	.027	701.29	15,000	405.00	11,400	296.29
4. Gasoline for blending	3,000	.035	105.00	.023	69.73			3,000	69.73
5. Raw gasoline	9,200	.030	276.00	.020	183.29			9,200	183.29
6. Raw gasoline	9,200	.030	276.00	.020	183.29			9,200	183.29
7. Raw light gasoline	9,400	.030	282.00	.020	187.27			9,400	187.27
8. Kerosene	500	.030	15.00	.020	9.96	400	8.00	100	1.96
9. Kerosene distillate	4,700	.028	131.60	.019	87.39			4,700	87.39
10. Treated pressure distillate	2,000	.030	60.00	.020	39.85			2,000	39.85
11. Pressure distillate	5,000	.029	145.00	.019	96.29			5,000	96.29
12. Wet gas		.010							
13. Residue gas	21,000	.012	252.00	.008	167.35	21,000	167.35		
14. Distillate (furnace oil)	400	.025	10.00	.017	6.64	300	5.10	100	1.54
15. Gas oil	10,400	.020	208.00	.013	138.13			10,400	138.13
16. Topped crude	18,900	.018	340.20	.012	225.93			18,900	225.93
17. Fuel oil	15,900	.012	190.80	.008	126.71	15,000	120.00	900	6.71
18. Recracking stocks	9,700	.015	145.50	.010	96.63			9,700	96.63
19. Pitch	1,800	.005	9.00	.003	5.98			1,800	5.98
	194,200		$6,363.10		$4,225.70	84,700	$2,015.45	109,500	$2,210.25
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)

Cost—Column 15	
Production costs	$1,547.70
Purchases	168.00
Opening inventory	2,510.00
Total per statement (1)	$4,225.70

Apportionment of Costs

1. Items of 11 times items of 12 equals items of 13
2. Total of 15 divided by total of 13 equals reciprocal (.66409)
3. Reciprocal (.66409) times items of 13 equals items of 15
4. Items of 15 divided by items of 11 equals items of 14
5. Items of 14 times items of 16 equals items of 17
6. Items of 14 times items of 18 equals items of 19

(6) *Market Prices—Average of Quoted Prices for the "Period"*

(Used as realization in statement 1 and to value products in statement 7)

	Number	Product	Per gallon	Per barrel
Main products	1	Ethyl gasoline	$.070	$2.94
	2	Gasoline	.050	2.10
	3	Gasoline	.040	1.68
	4	Light gasoline	.035	1.47
	5	Raw gasoline	.030	1.26
	6	Raw gasoline	.030	1.26
	7	Raw light gasoline	.030	1.26
	8	Kerosene	.030	1.26
	9	Kerosene distillate	.028	1.176
	10	Treated pressure distillate	.030	1.26
	11	Pressure distillate	.029	1.218
By-products	12	Wet gas	.010	.42
	13	Residue gas	.012	.504
	14	Distillate (furnace oil)	.025	1.05
	15	Gas oil	.020	.84
	16	Topped Crude	.018	.756
	17	Fuel oil	.012	.504
	18	Recracking stocks	.015	.63
	19	Pitch	.005	.21

(7) *Operations by Processes I to VII—Sheet 1-3*

	Product	Average gravity	Per cent.	Barrels	Gallons	Per barrel	Per gallon	Market value	Allocated value
I. Topping process									
Consumed:									
Crude oil including pipage		38.9	100	1,000	42,000	$ .840	$.020	$840.00	
Expenses						.042	.001	42.00	
			100	1,000	42,000			$882.00	
By-products:									
Gas oil	15	33.6	25	250	10,500	.840	.020	$210.00	
Topped crude	16	20.2	38	380	15,960	.756	.018	287.28	
			63	630	26,460			$497.28	$497.28
Main products:									
Kerosene distillate	9	42.5	10	100	4,200	1.176	.028	117.60	
						1.046	.025		104.58
Raw gasoline	5	60.3	25	250	10,500	1.260	.030	315.00	
						1.121	.027		280.14
Loss			2	20	840				
			100	1,000	42,000			$929.88	$882.00
II. Cracking process									
Consumed:									
Gas oil	15	33.3	5	50	2,100	.840	.020	$42.00	
Fuel oil	17	12.0	15	150	6,300	.504	.012	75.60	
Topped crude	16	20.6	5	50	2,100	.756	.018	37.80	
Recracking stocks	18	22.0	75	750	31,500	.630	.015	472.50	
Expenses						.126	.003	126.00	
			100	1,000	42,000			$753.90	
By-products:									
Recracking stocks	18	23.0	12	120	5,040	.630	.015	75.60	
Fuel oil	17	10.0	44	440	18,480	.504	.012	221.76	
Wet gas	12		12	120	5,040	.420	.010	50.40	
Pitch	19		2	20	840	.210	.005	4.20	
			70	700	29,400			$351.96	$351.96
Main products:									
Raw light gasoline	7	75.6	3	30	1,260	1.260	.030	37.80	
						1.479	.035		44.39
Pressure distillate	11	50.4	25	250	10,500	1.218	.029	304.50	
						1.430	.034		357.55
Loss			2	20	840				
			100	1,000	42,000			$694.26	$753.90

(7) *Operations by Processes I to VII—Sheet 2–3*

	Product	Average gravity	Per cent.	Barrels	Gallons	Per barrel	Per gallon	Market value	Allocated value
III. Gasoline extraction process									
Consumed:									
Wet gas	12		98	980	41,160	$ .420	$.010	$411.60	
Distillate	14	42.5	2	20	840	1.050	.025	21.00	
Expenses						.21	.005	210.00	
			100	1,000	42,000			$642.60	
By-product:									
Residue gas utilized	13		50	500	21,000	.504	.012	$252.00	$252.00
Main product:									
Raw light gasoline	7	83.7	50	500	21,000	{ 1.260 .781	.030 .019	630.00	390.60
			100	1,000	42,000			$882.00	$642.60

NOTE.—Barrelage of raw light gasoline is actually measured.

Barrelage of residue gas is determined by reducing the number of cubic feet recovered and utilized, according to BTU value, into barrels of fuel oil and so valued and charged to expense.

Distillate consumed is correctly ascertained.

The remainder—980 barrels (41,160 gallons) of wet gas, equivalent of X cubic feet of wet gas saved, is entered to balance.

This wet gas was obtained—

From cracking stills	5,040 gals.
From indeterminate sources around the plant	36,120 gals.
Total	41,160 gals.

A more detailed accounting for wet gas will be found in the later memorandum on natural gasoline plants.

	Product	Average gravity	Per cent.	Barrels	Gallons	Per barrel	Per gallon	Market value	Allocated value
IV. Treating process (intermediate)									
Treated:									
Pressure distillate	11	50.8	100	250	10,500	$1.430	$.034		$357.55
Expenses						.040	.001		10.00
			100	250	10,500	$1.470	$.035		$367.55
Main product:									
Treated pressure distillate	10	50.6	100	250	10,500	$1.470	$.035		$367.55

(7) *Operations by Processes I to VII—Sheet 3-3*

	Product	Average gravity	Per cent.	Barrels	Gallons	Per barrel	Per gallon	Market value	Allocated value
V. Rerunning process									
Rerun:									
Treated pressure distillate	10	50.6	100	250	10,500	$1.470	$.035		$ 367.55
Expenses						.084	.002		21.00
			100	250	10,500				$ 388.55
By-product:									
Recracking stocks	18	29.8	6	15	630	.630	.015		$ 9.45
Main product:									
Raw gasoline	6	51.8	93	232	9,744	1.633	.039		379.10
Loss			1	3	126				
			100	250	10,500				$ 388.55
VI. Treating process (finishing)									
Treating:									
Raw gasoline	5	60.3		250	10,500	1.121	.027		$ 280.14
Raw gasoline	6	51.8		232	9,744	1.633	.039		379.10
Raw light gasoline	7	75.6		30	1,260	1.479	.035		44.39
Raw light gasoline	7	83.7		500	21,000	.781	.019		390.60
Kerosene distillate	9	42.5		100	4,200	1.046	.025		104.58
Expenses						.042	.001		46.70
				1,112	46,704				$1,245.51
By-product:									
Distillate	14	40.5		10	420	1.050	.025	$ 10.50	$ 10.50
Main products—costs apportioned in ratio to market									
Kerosene	8	42.5		90	3,780	1.260	.030	113.40	
						.812	.019		73.10
Gasoline	2	58.2		400	16,800	2.100	.050	840.00	
						1.354	.032		541.33
"	3	60.9		300	12,600	1.680	.040	504.00	
						1.083	.026		324.91
"	4	83.5		312	13,104	1.470	.035	458.64	
						.948	.023		295.67
				1,112	46,704			$1,926.54	$1,245.51
Note: In actual practice there is a small treating loss.									
VII. Ethylizing process									
Ethylized:									
Gasoline	2			300	12,600	1.354	.032		$406.00
Expenses						.840	.020		252.00
				300	12,600	2.194	.052		$658.00
Main product:									
Ethyl gasoline	1			300	12,600	2.194	.052		$658.00

(8) *Processing Summary*

(Recapitulation of statement 7)
gallonage omitted

	Consumed				Produced			
	Barrels	Cost per barrel	Dollars	Main products	Barrels	Per barrel	Dollars	
				1. Ethyl gasoline	300	2.194	$ 658.00	VII
VII	300	$1.354	$ 406.00	2. Gasoline	400	1.354	541.33	VI
				3. Gasoline	300	1.083	324.91	VI
				4. Light gasoline	312	.948	295.67	VI
VI	250	1.121	280.14	5. Raw gasoline	250	1.121	280.14	I
VI	232	1.633	379.10	6. Raw gasoline	232	1.633	379.10	V
VI	30	1.479	44.39	7. Raw light gasoline	30	1.479	44.39	II
VI	500	.781	390.60		500	.781	390.60	III
				8. Kerosene	90	.812	73.10	VI
VI	100	1.046	104.58	9. Kerosene distillate	100	1.046	104.58	I
V	250	1.470	367.55	10. Treated pressure distillate	250	1.470	367.55	IV
IV	250	1.430	357.55	11. Pressure distillate	250	1.430	357.55	II
	1,912		$2,329.91		3,014		$3,816.92	
				By-products				
III	980	.420	$ 411.60	12. Wet gas	120	.420	$ 50.40	II
				13. Residue gas	500	.504	252.00	III
III	20	1.050	21.00	14. Distillate (furnace oil)	10	1.050	10.50	VI
II	50	.840	42.00	15. Gas oil	250	.840	210.00	I
II	50	.756	37.80	16. Topped crude	380	.756	287.28	I
II	150	.504	75.60	17. Fuel oil	440	.504	221.76	II
II	750	.630	472.50	18. Recracking stocks	120	.630	75.60	II
					15	.630	9.45	V
				19. Pitch	20	.210	4.20	II
	2,000		$1,060.50		1,855		$1,121.19	
	3,912		$3,390.41		4,869		$4,938.11	

Barrels carried to statement 5, columns 1 and 2

	Barrels	Dollars
Produced	4,869	$4,938.11
Consumed	3,912	3,390.41
Production cost	957	$1,547.70
Processing loss	43	
Crude oil run	1,000	$840.00
Expenses		707.70
Total cost as per statement 1		**$1,547.70**

In the event of changes in the price of crude oil followed by corresponding changes in the price structure of refined products, it is desirable to know the approximate effect of such changes, and therefore prospective statements are often made, in somewhat the following form, containing the latest market quotations.

PROSPECTIVE GASOLINE SINGLE-PRODUCT COST

	Per cent	Barrels	Per barrel	Dollars
Crude oil....(market)	100	1,000	$1.00	$1,000.00
Pipage....(cost)			.10	100.00
Operating expense....(do)			.12	120.00
Depreciation....(do)			.02	20.00
Direct departmental expense....(do)			.01	10.00
Total cost....	100	1,000	$1.25	$1,250.00
Deduct: by-products—				
Kerosene....(market)	5	50	1.68	$ 84.00
Gas oil....(do)	10	100	1.26	126.00
Fuel oil....(do)	25	250	.84	210.00
Loss....	5	50		
Total by-products at market....	45	450	.933	$ 420.00
Balance being gasoline single-product cost....	55	550	$1.51	$ 830.00
		Gallons	Per gallon	
Balance—gallon basis....	55	23,100	$ .036	$ 830.00

PROSPECTIVE REALIZATION ON GASOLINE PRODUCTION
From 1,000 barrels (42,000 gallons) of crude oil

	Gallons	Per gallon	Dollars
Sales No. 1 gasoline....(market)	7,500	$ .08	$ 600.00
Sales No. 2 gasoline....(do)	8,500	.06	510.00
Sales No. 3 gasoline....(do)	10,000	.04	400.00
Total sales....	26,000		$1,510.00
Cost of gasoline produced from 42,000 gallons of crude oil run...	23,100	.036	$ 830.00
Cost of gasoline purchased....	2,900	.025	72.50
Cost of ethylizing (7,500 gallons @ .02)....			150.00
Transportation expense....(42,000 gallons)		.001	42.00
Proportion of selling expense....(do do)		.003	126.00
Proportion of general expense....(do do)		.001	42.00
Total costs and expenses....	26,000		$1,262.50
Net realization per 1,000 barrels (42,000 gallons) of crude oil run			$ 247.50

The auxiliary records, designed in this case to give figures for the month and for the half year and year to the close of the month, form a source from which to ascertain various percentage and per-barrel rates.

Thus, the following described data would be derived for use in prospective statements:

Per cent.—The ultimate yield of products from crude oil run to stills (net plant yield).

Costs per barrel—actual costs divided by crude oil run to stills.

Transportation expense Proportion of selling expense Proportion of general expense	Actual expenses divided by crude oil run to stills.

These figures are trustworthy only when computed on the results of a period of six months or more. Even then, the figures might be subject to some adjustment, as in the event of a major addition to plant or changes in the processing routine.

[Discussion of lubricating and natural gasoline departments will be taken up in the next paper.—H. G. H.]

Legal Notes

HAROLD DUDLEY GREELEY, *Editor*

APPARENT AUTHORITY OF CORPORATE PRESIDENT

A question in the law of agency which always is of practical interest to accountants was raised in a recent municipal court case in Ramsey County, Minnesota. (*Temple Brissman & Co.* v. *Greater St. Paul Corporation*, not yet reported.) The court on appeal held that the evidence in the case justified the jury in finding that the president of the defendant corporation had been clothed with apparent authority to bind the corporation in a contract for an audit of its books.

The sole function of the corporation was the collection of rents from a single parcel of property, part of which was rented by the corporation's president in conducting a drug business. The corporation's treasurer recorded all financial transactions of the corporation in books of account used in another and separate business carried on by the treasurer. In 1926 and once again a few years later the president ordered an audit and both of these audits were paid for by the corporation. In neither instance was formal action taken by the corporation through its board of directors or otherwise. In 1929 the president demanded a third audit but the treasurer refused to pay for it. Nevertheless, the president in behalf of the corporation engaged plaintiff to make this third audit and the plaintiff did make it. Upon refusal by the corporation to pay plaintiff's bill, plaintiff sued the corporation and the president individually. It was conceded that plaintiff's charge was reasonable and the only question was whether the corporation or the president individually should pay for the audit. The corporation contended that the president had no authority to enter into such a contract on its behalf.

The court on appeal held that the president had authority to bind the corporation. The opinion of the court cited *Traxler* v. *Minneapolis Cedar Lumber Co.*, 128 Minn. 295, 150 N. W. 914 which held that the president of a corporation had implied authority to retain an attorney to defend the corporation, and then stated, "We can see little difference between the contract in that case and the one at bar. In both instances the president was acting to protect the corporation." But, the court continued, even assuming that the engaging of plaintiff was beyond the president's authority, the fact that the corporation had paid for two previous audits was sufficient to bind the corporation to pay for this third one. The powers of a president are not well defined but depend largely upon the practice of the particular corporation. The court distinguished the decision in *Grant* v. *Duluth Ry.*, 66 Minn. 349, 69 N. W. 23. That case held that the president of a railroad had no authority to bind it by an agreement that it would pay any loss sustained by a third person upon a contract previously made by that person and the railroad. There the corporation had never clothed the president with any apparent authority to make such a contract. There could be no presumed acquiescence by the directors for the president or any other officer to exercise such power.

STATE INCOME TAX RETURNS AS EVIDENCE IN BANKRUPTCY

Now that congress has decided that our economic recovery depends in part upon making federal income tax returns public records open to public examination and inspection to such an extent as shall be authorized in rules and regulations promulgated by the president (National Industrial Recovery Act, section 218 h), it is a comfort to find that our state income tax returns can not be obtained by trustees in bankruptcy, at least in the eastern district of New York (*In the matter of Hines* U. S. District Court, E. D. N. Y., June 7, 1933, 89 *N. Y. Law Journal* 3539, June 13, 1933). In this case a referee in bankruptcy had ordered the bankrupt to give to the trustee an order directed to the New York tax commission requiring it to deliver to the trustee certified copies of state income tax returns filed by the bankrupt. The tax commission previously had refused to give copies to the trustee. The New York statute provides that returns shall not be disclosed, except in certain circumstances not relevant in this case, but that certified copies may be delivered to "a taxpayer or his duly authorized representative." The federal court held that a trustee in bankruptcy was not a duly authorized representative of the bankrupt and reversed the order of the referee.

The purpose of the secrecy provision in the New York statute was to encourage frank and truthful income tax returns and to lessen the natural unpopularity of the tax. The provision permitting the taxpayer or his representative to procure copies was intended solely for the benefit of the taxpayer or a representative designated by him personally or a representative designated by law to act for him and for his benefit or for the benefit of his estate. The policy of the New York tax commission has been to recognize a trustee in bankruptcy not as a representative of the taxpayer but as a representative of the creditors and hostile to the bankrupt. The federal court approved of this policy and held that the referee himself could not compel the tax commission to disclose the returns nor could the referee accomplish the same result indirectly by compelling the bankrupt to request the tax commission to disclose them.

Students' Department

H. P. Baumann, *Editor*

AMERICAN INSTITUTE EXAMINATIONS

[Note.—The fact that these solutions appear in The Journal of Accountancy should not cause the reader to assume that they are the official solutions of the board of examiners. They represent merely the opinions of the editor of the *Students' Department.*]

Examination in Accounting Theory and Practice—Part I

May 11, 1933, 1:30 P. M. to 6:30 P. M.

The candidate must answer the first three questions and one other question.

No. 2 (32 points):

In order to obtain a controlled source of crude oil to augment its own small production, the X Refining Corporation purchased the entire outstanding capital stock of the K O Producing Company. The latter company had developed several prolific wells in a pool area, and the owners were looking for a market for the oil. To finance the purchase of the subsidiary, the refining corporation sold $600,000 of 7 per cent. preferred stock and paid cash for the capital stock of the producing company.

At December 31, 1930, you are engaged to submit a report covering the operations for the year 1930. On the basis of information furnished herewith prepare

(1) Consolidating balance-sheet as at December 31, 1930.
(2) Consolidating profit-and-loss statement for the year 1930.
(3) Consolidated surplus account for the year 1930.

Trial-balances (per books), December 31, 1930

	X Refining Corp.	K O Producing Company
Asset accounts:		
Cash	$ 110,000	$ 24,392
Accounts receivable	125,370	42,600
Inventories	75,640	5,762
Refinery and other property (cost)	1,007,391	
Oil property—		
Lease cost		1,000
Development expense		144,328
Equipment on lease		25,541
Other assets	32,000	31,000
Investment in K O capital stock	719,500	
	$2,069,901	$274,623
Liability accounts:		
Notes payable—banks	$ 150,000	$
Accounts payable	113,689	10,705
Accrued items	15,104	2,827
Reserves for depletion and depreciation	202,321	
Preferred stock—7 per cent.	600,000	
Common stock—		
80,000 shares of $10 each	800,000	
10,000 shares of no par value		100,000
Surplus balance	188,787	161,091
	$2,069,901	$274,623

Investment account in K O stock

Shares bought:		
December 10, 1929	4,900 @ $75	$367,500
December 28, 1929	1,000 @ 65	65,000
January 15, 1930	4,100 @ 70	287,000
	10,000	$719,500

For practical purposes, the date of acquisition was December 31, 1929, and may be so considered in this problem.

X Refining Corporation
Profit-and-loss account (per books)

	Year 1929	Year 1930
Operating revenue	$932,609	$865,392
Operating and general expenses	765,503	775,255
	$167,106	$ 90,137
Depreciation and depletion	$ 79,886	$ 82,401
Net operating income	$ 87,220	$ 7,736
Dividends received on K O stock	24,500	250,000
Net profit	$111,720	$257,736
Dividends paid on preferred stock		$ 42,000
Dividends paid on common stock	$ 80,000	120,000
	$ 80,000	$162,000
Net revenue—to surplus	$ 31,720	$ 95,736
Opening surplus	61,331	93,051
Closing surplus	$ 93,051	$188,787

K O Producing Company
Profit-and-loss account (per books)
(Operations commenced January, 1928)

	Year 1928	Year 1929	Year 1930
Barrels of oil produced	101,330	398,742	528,067
Oil sales	$152,309	$477,822	$573,112
Operating and general expenses	136,103	271,597	284,452
	$ 16,206	$206,225	$288,660
Provision for depletion			
Net income	$ 16,206	$206,225	$288,660
Dividends paid—June 15th		$50,000	$100,000
Dividends paid—December 15th		50,000	150,000
	$	$100,000	$250,000
Net revenue—to surplus	$ 16,206	$106,225	$ 38,660
Opening surplus		16,206	122,431
Closing surplus	$ 16,206	$122,431	$161,091

GENERAL INFORMATION AND REMARKS

The oil reserves (recoverable oil underground) of the K O Producing Company were estimated, by reliable geologists, to be 1,407,600 bbls. at December 31, 1930.

No depletion has ever been provided in the accounts of the K O Producing Company.

For the sake of simplification, assume that no capital additions have been made in the period under audit.

Inter-company sales, during 1930, amounted to $373,408. Inter-company profit remaining in inventories is nominal and may be ignored.

Disregard federal-income-tax features.

Solution:

To correctly state the profits and surplus of the K O Producing Company, it will be necessary to compute the depletion and depreciation charges on the fixed assets, as follows:

		Barrels
Oil reserves, January 1, 1928:		
Oil reserves, as estimated, at December 31, 1930...		1,407,600
Production for the years:		
1928	101,330	
1929	398,742	
1930	528,067	1,028,139
Total		2,435,739
Property cost:		
Lease cost	$ 1,000	
Development expense	144,328	
Equipment on lease	25,541	
Total		$ 170,869

(NOTE.—Nothing being stated to the contrary, the equipment on lease is depreciated on the basis of production.)

Cost per thousand barrels is, therefore, $170,869 ÷ 2,435,739 bbls. or $70.15.

The adjustment for depletion and depreciation follows:

	Barrels	Amount
Chargeable to surplus, January 1, 1930:		
Production:		
1928	101,330	
1929	398,742	
Total	500,072	$35,080
Chargeable to profit and loss, 1930:		
Production	528,067	37,044
Total for the three years	1,028,139	$72,124

As the K O Producing Company, for practical purposes, was acquired on December 31, 1929, the dividend of $24,500 received from it during 1929 by the X Refining Company should be treated by that company as a reduction of the cost of its investment. The adjustment would be:

Surplus	$24,500	
Investment in K O capital stock		$24,500
To transfer the dividend received, which was a reduction of the cost of the investment rather than income.		

This adjustment affects both the computation of the goodwill arising from the purchase of the stock of the K O Producing Company, and the consolidated surplus.

The computation of the goodwill arising from the purchase of the K O Producing Company follows:

Cost of stock, as of January 1, 1930		$719,500	
Less—dividends received, December 1929		24,500	
Adjusted cost of stock			$695,000
Net worth of the K O Producing Company as at January 1, 1930:			
Capital stock		$100,000	
Surplus—per books	$122,431		
Less—accrued depletion	35,080	87,351	
Adjusted net worth			187,351
Goodwill arising from purchase			$507,649

This "goodwill" of $507,649, when contrasted with the K O Producing Company's net assets of only $187,351, indicates very clearly that the value of the company's oil reserves is far in excess of their book cost. From the standpoint of the consolidated group, this $507,649 may be considered as representing additional cost of the oil properties. Furthermore, the oil will be exhausted in less than three years at the 1930 rate of production. For these reasons it is necessary to write off this $507,649 property premium against the income from the oil property, on the basis of barrels of oil produced.

If this is not done, the income of the consolidated group will be overstated for the next three years. Then, when all of the oil has been extracted, the premium of $507,649 will remain on the books, a worthless asset.

The charge to 1930 income for amortization of this property premium is computed as follows:

Oil reserves, January 1, 1930 (1,407,600 plus 528,067)	1,935,677 barrels
Property premium	$507,649
Premium per 1,000 barrels	$262.26
Premium chargeable to 1930 (528.067 x $262.26)	$138,491

The following consolidated statement of profit and loss has been prepared from the separate profit-and-loss statements given in the problem, after giving effect to (1) the inter-company sales and purchases of $373,408, (2) the adjustment for depletion and depreciation of $37,044 shown above, and (3) the amortization of property premium.

It must be assumed, in making the elimination for the inter-company sales, that "operating revenue" represents sales, and not gross profit.

X REFINING CORPORATION

Consolidated statement of profit and loss, year ended December 31, 1930

	X Refining Corporation	K O Producing Company	Adjustments and eliminations	Consolidated
Oil sales and operating revenue	$865,392	$573,112	$373,408*	$1,065,096
Operating and general expenses	775,255	284,452	373,408*	686,299
Net profit before depreciation and depletion	$ 90,137	$288,660	$	$ 378,797
Depreciation and depletion	82,401	37,044	138,491	257,936
Net profit (before federal income tax)	$ 7,736	$251,616	$138,491	$ 120,861

X REFINING CORPORATION

Statement of consolidated surplus for the year ended December 31, 1930

Balance, January 1, 1930	$ 93,051	
Less—adjustment for dividend received from K O Producing Company, December, 1929	24,500	
Adjusted balance, January 1, 1930		$ 68,551
Consolidated profits for the year 1930		120,861
Total		$189,412
Dividends paid:		
Preferred	$ 42,000	
Common	120,000	162,000
Balance, December 31, 1930		$ 27,412

The consolidated balance-sheet which follows was prepared without working papers. The reciprocal accounts, i.e., the investment account on the books of the X Refining Corporation and the capital stock and surplus accounts of the K O Producing Company were eliminated, and the property premium and reserves for depreciation and depletion as computed above were taken up. The amounts in the other accounts in the balance-sheet were obtained by cross-adding like accounts on the face of the problem.

X REFINING CORPORATION AND SUBSIDIARY

Consolidated balance-sheet, December 31, 1930

Assets

Current assets:		
Cash	$134,392	
Accounts receivable	167,970	
Inventories	81,402	
Total current assets		$ 383,764

Fixed assets:			
Refinery and other property (cost)	$1,007,391		
Reserves for depletion and depreciation	202,321		
		$805,070	
Oil property:			
Lease cost	$ 1,000		
Development expense	144,328		
Equipment on lease	25,541		
Total	$ 170,869		
Reserves for depletion and depreciation	72,124	98,745	
Total fixed assets			$ 903,815
Premium on oil property		$507,649	
Less—amortization		138,491	
Net book value			369,158
Other assets			63,000
			$1,719,737

Liabilities and Net Worth

Current liabilities:		
Notes payable—banks	$150,000	
Accounts payable	124,394	
Accrued items	17,931	
Total current liabilities		$ 292,325
Net worth:		
Preferred stock, 7%, 6,000 shares	$600,000	
Common stock, 80,000 shares	800,000	
Surplus	27,412	
Total net worth		1,427,412
		$1,719,737

No. 3 (17 points):

From the following data submit, in detail and in total, the value, at cost, of the closing inventory. If there is any inconsistency with regard to the selling prices of the several sizes, state your explanation.

During a certain period, a plate-glass factory cast and rolled about 850,000 square feet of glass. The product, after cutting up in order to eliminate defects, was priced for sale as follows:

Size No. 1	28 cents per square foot
" " 2	24 " " " "
" " 3	22 " " " "
" " 4	20 " " " "
" " 5	14 " " " "
" " 6	5 " " " "

Any product below No. 6 was returned to process and remelted.
As may be seen, the selling price for a given quality varied with the size, the largest perfect sheets selling for the highest price per square foot.
The total cost of materials, manufacture, grinding, polishing, cutting and sorting, including factory expense, was $120,807.
The inventories—in square feet—were

	Opening	Closing
Size No. 1	10,000	12,860
" " 2		11,000
" " 3	10,000	23,000
" " 4		6,000
" " 5		
" " 6		2,000

The sales—at list selling prices—were

Size No. 1	$30,240
" " 2	36,480
" " 3	35,376
" " 4	21,100
" " 5	9,030
" " 6	2,300

Solution:

The production in square feet for the year of the different sizes of plate-glass appearing in the closing inventory is shown on the following page.

From the computation, it will be seen that the production of 671,660 square feet is considerably less than the stated amount (850,000 square feet) cast and rolled during the year. It must be assumed that this difference was "below No. 6" and was returned to process and remelted. It must further be assumed that the cost of materials, manufacture, grinding, polishing, cutting and sorting, including factory expense was credited with the cost of the material which was returned for casting and rolling in arriving at the cost of $120,807.

Ignoring the factor of grades or selling prices, the cost per square foot of the glass produced during the year would be ($120,807 ÷ 671,660) or $.1798633. On the basis of this cost, the selling price of size 1 results in a gross profit of 10 cents per square foot and the selling price of grade 6, a gross loss of 13 cents per square foot. The inventory by sizes, follows:

Closing inventory—at $.1798633 per square foot

Size	Square feet	Cost
1	12,860	$2,313.04
2	11,000	1,978.50
3	23,000	4,136.86
4	6,000	1,079.18
5		
6	2,000	359.73
Total	54,860	$9,867.31

A better method, which is generally recognized, would be to allocate the cost to the various sizes on the basis of the selling prices, as shown on p. 142.

Computation of square feet produced, by sizes

Size	Sales: Amount	Sales: Unit price	Sales: Quantity	Closing inventory	Opening inventory	Production
1	$ 30,240	$ .28	108,000 sq. ft.	12,860 sq. ft.	10,000 sq. ft.	110,860 sq. ft.
2	36,480	.24	152,000	11,000		163,000
3	35,376	.22	160,800	23,000	10,000	173,800
4	21,100	.20	105,500	6,000		111,500
5	9,030	.14	64,500			64,500
6	2,300	.05	46,000	2,000		48,000
Total	$134,526		636,800 sq. ft.	54,860 sq. ft.	20,000 sq. ft.	671,660 sq. ft.

Computation of unit costs of sizes based upon selling prices

Size	Production	Sales price	Production at sales price	Ratio to total	Total cost in same ratio	Unit cost
1	110,860 sq. ft.	$ .28	$ 31,040.80	21.8%	$ 26,335.93	$ .2375
2	163,000	.24	39,120.00	27.5	33,221.92	.2038
3	173,800	.22	38,236.00	26.9	32,497.08	.1870
4	111,500	.20	22,300.00	15.7	18,966.70	.1701
5	64,500	.14	9,030.00	6.4	7,731.65	.1200
6	48,000	.05	2,400.00	1.7	2,053.72	.0428
Total	671,660 sq. ft.		$142,126.80	100.0%	$120,807.00	

Computation of closing inventory

Size	Square feet	Per square foot	Total
1	12,860	$ .2375	$ 3,054.25
2	11,000	.2038	2,241.80
3	23,000	.1870	4,301.00
4	6,000	.1701	1,020.60
5		.1200	
6	2,000	.0428	85.60
Total	54,860		$10,703.25

The computation on the preceding page may be shortened somewhat in the following manner. After the production in square feet and the sales price of the production have been ascertained, the ratio of the cost of production to the sales price can be determined. This ratio ($120,807 ÷ $142,126.80) of .8499+ may then be applied to the separate selling prices of the various sizes to determine the cost, as follows:

Size	Sales price	Cost
1	$ .28	$ .2380
2	.24	.2040
3	.22	.1870
4	.20	.1700
5	.14	.1190
6	.05	.0425

The closing inventory, based on these costs, follows:

Size	Square feet	Cost per square foot	Total
1	12,860	$ .2380	$ 3,060.68
2	11,000	.2040	2,244.00
3	23,000	.1870	4,301.00
4	6,000	.1700	1,020.00
5		.1190	
6	2,000	.0425	85.00
Total	54,860		$10,710.68

No. 4 (14 points):

From the following data, prepare entries for the corporation's books to record all exchange transactions, the exchange position, and profits realized. Show, also, what the result would have been had the exchange risk not been covered.

A United States Corporation, owning the entire capital stock of a foreign company, sells its raw material to this company at cost. From this raw material the foreign company manufactures a certain product which it sells exclusively in its own country. It pays for the raw material bought, and remits the net profits as soon as they are realized in cash.

The unit of this foreign currency is the crown, worthy sixty cents at par of exchange.

The rate of exchange declining, the customary measures are taken by the U. S. corporation to guard against exchange losses. These measures consist, principally, of selling forward the foreign currency to be collected. For this reason and purpose, the company's costs and expenses, as well as the proceeds from its sales, must necessarily be determined as nearly as possible in advance.

Crowns are freely bought and sold in the U. S., there being no restriction by the foreign government on the transfer of domestic funds to other countries.

On October 1st, when the crown was selling at 30, the U. S. corporation shipped raw material which cost $30,000 and billed the foreign company for the equivalent of 100,000 crowns, payable December 30th.

It was estimated that all manufacturing, selling, administration and other expenses applicable to this venture would be 120,000 crowns and that the product would be all sold by December 30th for 250,000 crowns. The estimate proved to be correct with one exception, viz:—the goods were actually sold and delivered by December 30th for 255,000 crowns, spot cash, f. o. b. factory.

The rate of exchange had, in the meantime, fallen to 20.

Solution:

October 1st:

Foreign company		30,000	
Inventory (sales to foreign subsidiary)			30,000
To record shipment of raw materials at cost to foreign subsidiary—payment to be made December 30th.			
Due from exchange broker		39,000	
Liability on exchange sold			39,000
To record the sale of 130,000 crowns at 30, delivery to be made on December 30th, against the expected remittance upon collection of sale:			
Sales price	$250,000		
Expenses	120,000		
Remittance	$130,000		

December 30th:

Foreign company	10,000	
Profit on sales of foreign company		10,000
To record the profit on the sales of the foreign company as reported below.		
Cash	1,000	
Liability on exchange sold	39,000	
Foreign company		30,000
Foreign company		10,000

To record the receipt of exchange from the foreign company:

130,000	crowns delivered at 30 against short sale of October 1st
5,000	crowns sold at current market—20
135,000	

Cash	$39,000	
Due from exchange broker		$39,000

To record the receipt of cash from the broker for exchange sold on October 1st and delivered this date (expenses and commissions incident to the sale would be deducted by the broker at this time and recorded).

The computation of the profit follows:

	Crowns	Rate	Dollars
Expected profit:			
Sales price	250,000		
Materials and expenses	220,000		
Expected profit	30,000	.30	$ 9,000
Additional profit:			
Actual sales price	255,000		
Estimated sales price	250,000		
Additional profit	5,000	.20	1,000
Total	35,000		$10,000

If there had been no future sale of exchange, there would have been a loss on the transaction of $3,000, as follows:

Cost of merchandise shipped to foreign company	$30,000
Value of crowns received therefor:	
135,000 crowns at 20	27,000
Loss	$ 3,000

The loss may be further analyzed as follows:

Profit of foreign company, as computed above	$10,000
Loss that should have been averted by exchange transaction:	
130,000 crowns at 10 points (30–20)	13,000
Loss	$ 3,000

No. 5 (14 points):

An excerpt from the certificate of incorporation of a certain corporation reads as follows:

"So long as five thousand (5,000) or more shares of $7 cumulative preferred stock shall be outstanding the company shall not pay or declare any dividends in cash or property on any of its outstanding shares (exclusive of the cumulative dividends on outstanding shares of $7 cumulative preferred stock) unless the company shall have, out of its net profits or out of its net assets in excess of its capital, purchased and canceled or redeemed an aggregate number of its $7 cumulative preferred stock equal to the sum of the number of shares hereinafter designated for such purchase or redemption in respect of the calendar year in which such dividend payment is made and also in respect of each previous calendar year subsequent to the calendar year 1927. The number of shares of $7 cumulative preferred stock designated for purchase or redemption in respect of each calendar year for the purposes of the foregoing calculation shall be one-half of that number of shares arrived at by dividing the total number of shares of $7 cumulative preferred stock outstanding on the first day of January of such calendar year by the number of full calendar years which will elapse between the first day of January (such day being included) of the calendar year in respect of which such determination is made and January 1, 1943."

There were 10,000 shares of preferred stock outstanding at January 1, 1928. No shares were subsequently sold and the company acquired preferred stock as follows:

In the year 1929..............	750 shares
" " " 1930..............	713 "
" " " 1931..............	526 "

How many shares of preferred stock will have to be acquired in 1932 and in 1933 to permit the company to pay a dividend in each of those years on its common stock?

Submit your answer in tabular form.

Solution:

The solution of this problem hinges on the interpretation of the second sentence: "the number of shares . . . designated for redemption in respect of each calendar year . . . shall be" a varying fraction of the shares of preferred stock outstanding at the beginning of that calendar year.

Does this sentence merely set a requirement for each year, which requirement may be satisfied in advance? Or, does this sentence imply that a certain fraction of the shares actually outstanding at the first of the year must be purchased during the year?

In support of the first contention it may be stated that the words "during the year" do not appear anywhere in the certificate; further, if the company is permitted to make good back requirements, why should it not be able to anticipate future requirements, even though the amount thereof may not be definitely known?

In support of the second contention, it may be argued that the year's requirements can not be determined exactly until the first of the year; therefore it seems anomalous that these requirements can be met in advance.

Because of the phraseology employed, the following solution has been prepared on the two bases. (In actual practice, the company's attorney should be asked to interpret this provision.)

(1) As long as the company's aggregate purchases at the close of any calendar year equal the aggregate requirements to date, the company may pay common dividends, whether or not it has made any purchases during the current year.

(1) Table showing preferred stock redemption requirements, shares redeemed or to be redeemed, and excess of redemptions over requirements, by years.

Current year	Years to January 1, 1943	Fraction	Shares outstanding at beginning of year	Redemption requirements: Annual	Redemption requirements: Accumulated	Shares redeemed or to be redeemed: Annual	Shares redeemed or to be redeemed: Accumulated	Excess of redemptions over requirements
1928	15	1/30	10,000	333	333			*333*
1929	14	1/28	10,000	357	690	750	750	60
1930	13	1/26	9,250	356	1,046	713	1,463	417
1931	12	1/24	8,537	356	1,402	526	1,989	587
1932	11	1/22	8,011	364	1,766		1,989	223
1933	10	1/20	8,011	401	2,167	178	2,167	

Fractions over one-half are considered as full shares; fractions under one-half are disregarded.
On this basis, the required purchases would be:

1932 . . . . none
1933 . . . . 178 shares

(2) The current year's requirements, plus all unsatisfied back requirements, must be purchased each year. Purchases, in excess of annual requirements may not be applied in satisfaction of the requirements of subsequent years.
On this basis, the required purchases would be:

1932 . . . . 364 shares
1933 . . . . 382 shares

Table showing preferred stock redemption requirements, shares redeemed or to be redeemed, and excess of redemptions over requirements, by years.

Current year	Years to January 1, 1943	Fraction	Shares outstanding at beginning of year	Redemption requirements: Annual	Redemption requirements: Accumulated	Shares redeemed or to be redeemed: Annual	Shares redeemed or to be redeemed: Accumulated	Excess of redemptions over requirements
1928	15	1/30	10,000	333	333			*333*
1929	14	1/28	10,000	357	690	750	750	60
1930	13	1/26	9,250	356	1,046	713	1,463	417
1931	12	1/24	8,537	356	1,402	526	1,989	587
1932	11	1/22	8,011	364	1,766	364	2,353	587
1933	10	1/20	7,647	382	2,148	382	2,735	587

Fractions over one-half are considered as full shares; fractions under one-half are disregarded.

Correspondence

LAW AND ACCOUNTING

[NOTE:—We have received permission to publish the following letter addressed by Anson Herrick, California, to Henry W. Ballantine, professor of jurisprudence at the University of California. Mr. Ballantine requested accounting assistance in the framing of some of the sections of the new corporation law, and several accountants, of whom Mr. Herrick was one, coöperated with Mr. Ballantine. The letter is self-explanatory.

Supplementing the letter is a communication from F. W. Thornton, commenting upon the matters discussed by Mr. Herrick.

These two letters are presented here in the hope that they will be of interest to readers and may encourage further discussion of the highly important subject with which they deal.—EDITOR.]

HENRY W. BALLANTINE, ESQ.,
Berkeley, California.

My dear Ballantine:

This is a delayed response to your letter of the 17th. I am not entirely in accord with Professor Hatfield's statement that the deduction of the cost of treasury shares from capital stock is simply a recognized convention of accounting and the subtraction does not mean that there is any reduction of the amount of stated capital. In any conflict between the principles of law and accounting (and as far as that goes between the law and the conventions concerning any other professional business) law, sometimes unfortunately, must be recognized as determining. Consequently, regardless of any accounting conventions which might be considered necessary of continuance, its continuance would not change the legal fact, and accordingly, to such extent Professor Hatfield is right. However, I am strongly inclined to think that the majority of deductions of treasury stock from capital is made without due consideration of the legal requirements and I do not think there is any accounting necessity which produces a statement which is inaccurate or may be misunderstood.

I am inclined to think that when treasury shares are carried as an asset it is commonly understood that the amount of such asset account does not reduce the surplus used to make their purchase. Consequently, wherever it is thought advisable to show treasury stock as an asset, surplus should nevertheless be reduced by the same amount and the arithmetical balance of the balance-sheet should be perfected by the insertion of a treasury stock reserve. Such a procedure was my first thought in our discussions of last year, but I now incline to the belief that it will be the rare case in which there is any justification for showing treasury shares as an asset.

I recently had occasion to issue a balance-sheet in the case of a corporation—having both preferred and common stock—which had purchased, and retained in treasury without formal retirement, certain preferred shares and certain common shares. The corporation held a Delaware charter. After considerable study I finally presented the capital and surplus on the balance-sheet as follows:

1. Capital			$1,200,000.00
Preferred—100,000 shares, par $10.00—including 1,000 shares held in treasury		$1,000,000.00	
Common—200,000 shares—par $1.00—including 18,000 shares in treasury		200,000.00	
Earned surplus			224,000.00
Balance 1/1/32		$300,000.00	
Less loss 1932	$50,000.00		
Cost of 1,000 shs. pfd.	5,000.00		
Cost of 18,000 " com.	21,000.00	76,000.00	
Total capital and surplus			$1,424,000.00

From a perfectly practical standpoint the liability (as against common stockholders) upon preferred stock had truly been reduced to $990,000.00 and the accountability of the directors to common stockholders had also been reduced to $182,000.00. Accordingly, in point of fact, and in accord with what might be termed ordinary accounting procedure, the showing might have been as follows:

2. Capital		$1,172,000.00
Preferred— 99,000 shs. at $10 par	$990,000.00	
Common—182,000 " at $1 par	182,000.00	
Earned surplus		250,000.00
Balance Jan. 1, 1932	$300,000.00	
Less loss 1932	50,000.00	
Capital surplus		2,000.00
Discount on purchases 1,000 shs. pfd.	$5,000.00	
Premium on purchases 18,000 " com.	3,000.00	
Total capital and surplus		$1,424,000.00

In the foregoing, however, there is no statement of the amount of stated capital and the earned surplus is incorrectly shown inasmuch as there was an actual distribution of earnings in connection with the purchase of the common stock at a price in excess of the capital attributable thereto. The matter might have been shown as follows:

3. Capital			$1,200,000.00
Preferred— 99,000 shs. at $10 par		$ 990,000.00	
Common—182,000 " at $1 par		182,000.00	
Capital stock acquired out of surplus		28,000.00	
Earned surplus			224,000.00
Balance Jan. 1, 1932		$ 300,000.00	
Less loss 1932	$50,000.00		
Cost of 18,000 shs. com.	21,000.00		
Cost of 1,000 " pfd.	5,000.00	76,000.00	
Total capital and surplus			$1,424,000.00

In the foregoing the liability and accountability for preferred and common shares outstanding is correctly shown and in addition the legal capital is correctly stated. The earned surplus is correctly shown from a legal standpoint in that there has been deducted the entire cost of the shares repurchased. Again the matter might have been shown as follows:

4. Capital		$1,174,000.00
Preferred—100,000 shs. at $10	$1,000,000.00	
Common—200,000 " at $1	200,000.00	
Total stated capital	$1,200,000.00	
Less cost of 1,000 shs. pfd. and 18,000 shs. com.	26,000.00	
Earned surplus		250,000.00
Total capital and surplus		$1,424,000.00

In the foregoing the total legal capital is shown and the entire cost of the shares repurchased has then been deducted on the theory that the cost was paid out of capital.

In the last two illustrations, while the stated capital is correct, I think the showing of earned surplus is incorrect. In the former the earned surplus has been charged for all of the cost of the stock repurchased. In the case of the common stock this cost includes both earnings and original capital contribution, the last of which is not, for practical purposes, a deduction from undistributed earnings. Also the charge for $5,000.00, being the cost of preferred stock repurchased, is inaccurate from a practical standpoint because it represents in effect a return of contributed capital. In the latter of the two last cases, earned surplus is again wrong because it does not recognize the distribution of earnings in connection with the repurchase of common.

The matter might also be shown as follows:

5. Capital			$1,172,000.00
Preferred—100,000 shs. at $10		$1,000,000.00	
Common—200,000 " at $1		200,000.00	
Total stated capital		$1,200,000.00	
Less par value of 1,000 shs. pfd. and 18,000 com.		28,000.00	
Earned surplus			247,000.00
Balance 1/1/32		$ 300,000.00	
Less loss 1932	$50,000.00		
Earned surplus distributed on pchs. 18,000 com. stock	3,000.00	53,000.00	
Capital surplus			5,000.00
Discount on purchase 1,000 shs. pfd. at $5			
			$1,424,000.00

In the foregoing the total legal stated capital is shown correctly and also there is correctly shown the total of the residual liability or accountability. The earned surplus is correct in that there has been deducted only that proportion of the amount disbursed for the purchase of shares which reflects distribution of earnings; i. e. the premium on the common stock. The discount on the purchase of the preferred stock is correctly shown as capital surplus; i. e. that part of the total surplus which is not representative of undistributed earnings. However, although stated capital is correctly shown the statement is still open to the objection that it produces a surplus total of $252,000.00 which is in excess of the legal surplus.

I think that any one of the foregoing illustrations may be defended and also criticized. The third illustration might be modified further by reducing the earned surplus to $219,000.00 and adding a capital surplus item of $5,000.00, and if so modified I now incline to the thought that it would be the most accurate showing, but it would unquestionably be confusing to many.

In another somewhat similar case in which I have had occasion to issue a balance-sheet, the preferred stock upon being repurchased was formally retired and the company's counsel advised that the par value was properly deductible from stated capital. Accordingly, in the preparation of the balance-sheet the preferred stock is stated at the par value of the shares which remain outstanding. In the case of the common stock, however, the entire cost was charged to surplus notwithstanding that it also was formally retired.

In connection with your question as to whether balance-sheets are frequently prepared so as to mislead the management and investors as to the true amount of surplus, I think that this is very frequently the case. However, your thought of misleading the management and investors is from the standpoint of an erroneous showing of the amount of legal surplus. While I realize it is a matter that probably can not be reached by statute, I think the greatest misleading of both investor and management arises through a statement of surplus with the inference that it measures the dividend capacity (and it may from a legal standpoint) when such inference is wholly incorrect. As I have so frequently pointed out, dividends depend not only upon an accumulation of earnings but upon the existence of sufficient working capital to enable the actual payment of the dividends. Consequently, the statement of an amount of earned surplus in face of a practical situation which prevents the use of any part of it for dividend is definitely misleading. I have always believed that a showing of earned surplus should be segregated as between that which is available for dividend and that which has been reinvested in fixed assets. This is easier said than done, however, because that proportion of undistributed earnings which really is subject to distribution and that proportion which is not is in many instances a matter of opinion or is dependent upon varying corporate policies.

Faithfully yours,

ANSON HERRICK

San Francisco, March 25, 1933.

Editor, THE JOURNAL OF ACCOUNTANCY:

SIR: Mr. Anson Herrick, seems to be exercised over what he thinks are requirements of "the law" with respect to purchase by a corporation of its own stock, to be observed in the preparation of balance-sheets.

What law? The corporation law of New York provides that a corporation may purchase its own stock out of surplus and that capital or capital stock may not be reduced "if the effect of such reduction or of any distribution of assets made pursuant thereto will be to reduce the actual value of its assets to an amount less than the total amount of its debts and liabilities plus the amount, *as reduced*, of its capital or issued capital stock as the case may be." In brief, a deficit must not be produced upon stating assets at "actual value."

The New Jersey statute expressly permits purchase of stock for retirement.

The Nevada law permits purchase of stock out of "capital, capital surplus, surplus, or other property or funds." The fifty-two states and territories have fifty-two different laws on the subject.

These statutes prescribe what a corporation legally may do; they do not prescribe the manner in which it shall state what it already has done. Accountants' balance-sheets are intended to show what transactions have taken place and the present financial position; they are financial, not legal, exhibits.

If corporation statutes should govern the form of balance-sheet these statements would vary according to the state of incorporation; what is legally right in one state may be a criminal offense in another. But accounting ethics are not defined by geographical limits; what is fair presentation in New York is fair presentation in Laputa.

Balance-sheets are prepared for lay readers; can they interpret these statements in harmony with imaginary requirements read into state statutes? Can we do it? Can the courts? Court interpretations of these laws, cited by Professor Briggs in his exhaustive articles in this JOURNAL, are a very Bedlam of contradictions. If there were a single federal statute it might perhaps be possible to produce a form of balance-sheet reconciling legal and accounting principles and generally understood; the best we can do now is to use a form that is generally understood because it is based on good accounting.

I know of no state law that purports to govern the form of balance-sheets. Speaking of their preparation Mr. Herrick says that "law must be recognized as determining" in any conflict between the principles of law and those of accounting. I reject that theory utterly. Our duty is to give statements showing the financial position as clearly and as correctly as we can; some of the specimens in the letter of Mr. Herrick are unnecessary attempts to prove that the corporation has complied with alleged legal requirements, a work of supererogation to the injury of the clarity of the statement of financial position.

Although there are no laws that I know of prescribing the form of presentation in balance-sheets of corporations that have acquired some of their own stock the United States treasury does give a form for that purpose in the tax report blank. The form is:

Capital stock (less stock in treasury)	Amount of stock in hands of stockholders

No reference here to the fifty-seven varieties of state statutes; the federal government wants informative financial statements and ignores local legal provisions that are made for quite other purposes, and do not even nominally apply to the preparation of accounts.

It would be unbecoming for an accountant to presume to instruct or criticize law makers or lawyers as such; if a lawyer tells me that each of the varying state statutes is good and useful for some legal purpose I might laugh but I could not deny it; even were there inclination to criticize another profession consideration of criticisms by another profession directed at accountants would deter. I do advise accountants to recognize that financial statements are not legal documents nor intended to set forth the legal position, and to prepare them so as to set forth the financial position in accordance with what they believe to be the best accounting practice, which is not affected by territorial boundaries.

If there were any statutory requirement exceeding the requirements of good accounting it should be observed; if there were in any statute applicable to a given case even the implication of a higher standard the implication should govern. I do not know of any such statute in any state. The object of statutes is not to prescribe honorable standards but to fix minimum standards below which penalties are provided. One who is satisfied to live just outside prison doors will naturally adapt his accounting to the lower standard.

Lawyers have their field, in which they should be respected and not encroached upon; we have our field, a different one. Trespassing is undesirable and unwelcome.

F. W. THORNTON.

New York, June 20, 1933.

Accounting Questions

[The questions and answers which appear in this section of THE JOURNAL OF ACCOUNTANCY have been received from the bureau of information conducted by the American Institute of Accountants. The questions have been asked and answered by practising accountants and are published here for general information. The executive committee of the American Institute of Accountants, in authorizing the publication of this matter, distinctly disclaims any responsibility for the views expressed. The answers given by those who reply are purely personal opinions. They are not in any sense an expression of the Institute nor of any committee of the Institute, but they are of value because they indicate the opinions held by competent members of the profession. The fact that many differences of opinion are expressed indicates the personal nature of the answers. The questions and answers selected for publication are those believed to be of general interest.—EDITOR.]

DEFERRED INCOME OF FINANCE COMPANIES

Question: We are interested in learning the method or methods that have been found most satisfactory and practical in determining the amount to be set up as deferred income of finance companies.

Often the amount reserved as deferred income includes several classes of items, such as unearned interest on notes purchased, interest on borrowed money, operating expenses and other items that might be incurred during the collection of the note. In other cases the unearned interest is carried in one reserve and the amount reserved for expenses in another.

In your reply please give a complete explanation and also advise if the varying maturities of notes have any effect upon the calculations.

Answer: We infer that your correspondent is not in sympathy with the practice of some companies of taking into the current income account the apparent profit which has been made at the time the notes were purchased, disregarding any unearned interest, possible collection expenses or losses. This method is so fundamentally unsound that it requires no further comment.

There does not seem to be any standard method in use by finance companies for determining that portion of income which should be deferred until some later accounting period. In all cases, the interest charge or discount which, together with the service charge, is usually deducted from the face value of the note or notes before the loan is made, is a factor which is definitely ascertainable as to the period in which it is earned. The service charge, on the other hand, is an item which gives rise to many questions as to its proper treatment. It may contain the interest expense for borrowed capital, certain operating expenses, an arbitrary charge for estimated future collection expenses, the cost of acquiring the loan, or selling expense, a provision for probable bad debts, and other sundry items.

Several methods for segregating this differential (the difference between the face amount of the note and the actual amount advanced thereon) into current and deferred income are set forth below:

1. Interest or discount, being definite in amount, is allocated to the period in which earned. No difficulty is encountered as to this item. The service charge, on the other hand, is spread pro-rata on a flat percentage basis over the life of the note or notes on the theory that the cost of collection and other operating expenses which may be included are approximately the same for any note regardless of maturity.

2. Interest is treated in the same manner as above but the service charge is spread on the basis of the reducing balances of loans outstanding on the theory that this charge is primarily to cover possible losses which are likely to be suffered due to the nature of the business.

It would seem that the choice between these methods depends upon the nature of the items included in the service charge. When this is determined, the desirability of either method should be fairly obvious.

3. The average maturity of all notes is first determined and the net increase in the unearned finance charges account during the current accounting period is then spread equally over as many periods as there are to the average maturity date, beginning the distribution with the current period. This will give the amount which is to be taken into current income as earned finance charges. The method has the virtue of being fairly simple in its workings.

4. Interest or discount is set up as deferred until earned. The service charge, representing as its title implies, the fee for the accommodations and services rendered or to be rendered is segregated into so-called reserves for future expenses or costs and current expenses already incurred. For example, experience will furnish data on the average percentage of loss per loan, collection expenses, etc. Reserves are then set up for these items. Expenses in obtaining the account are deducted from the service fee and the balance of such service charge taken into current income. The method is as simple as any and is sound from an accounting point of view.

Each of the above methods has its advantages and the choice of any one will depend on the nature of the accounts which are maintained and the charges which are included in the service charge.

Current Literature

Compiled in the Library of the American Institute of Accountants.

ACCOUNTANCY

Germany

Resident Accountant. *Accountancy in Germany.* JOURNAL OF ACCOUNTANCY, July 1933, p. 8–16.

ACCOUNTANTS

Duties and Responsibilities

Himmelblau, David. *Auditors' Responsibilities to Third Parties.* ACCOUNTING REVIEW, June 1933, p. 99–104.

ACCOUNTING

Haun, R. D. *Two Present-Day Problems of General Financial Accounting.* ACCOUNTING REVIEW, June 1933, p. 117–8.

ADVERTISING AGENCIES

Accounting

Essex-Crosby, A. *Advertising Agency Organisation and Accounts.* London, Gee and Company, Limited, 1933. 61 p.

AUTOMOBILE SERVICE STATIONS

Accounting

Belcher, G. D. *Car Service Accounts.* COST ACCOUNTANT, June 1933, p. 12–6.

BALANCE SHEETS

Touche, George L. C. *Form of the Balance Sheet.* ACCOUNTANT, July 1, 1933, p. 17–23.

CERTIFICATES

Suffern, Philip S. *Meaning of a C. P. A. Certification on a Bank Customer's Statement.* BULLETIN, THE NEW YORK STATE SOCIETY OF CERTIFIED PUBLIC ACCOUNTANTS, July 1933, p. 18–26.

CHAIN STORES

Statistics

Harvard University. Graduate School of Business Administration, Bureau of Business Research. *Expenses and Profits of Variety Chains in 1931 Compared with 1929, by Malcolm P. McNair.* Soldiers Field, Boston, Massachusetts, Harvard University, Bureau of Business Research, March 1933. 53 p. (Bulletin no. 89.)

CHEMICAL INDUSTRY

Cost Accounting

Peterkin, A. G., and Jones, H. W. *Cost Accounting and the Chemical Engineer.* CHEMICAL AND METALLURGICAL ENGINEERING, February, March, 1933, p. 86–8; 133–5.

CLOTHING INDUSTRY

Accounting

Kahn, Julius D. *Some Aspects in Accounting for Manufacturers Employing Contractors.* JOURNAL OF ACCOUNTANCY, July 1933, p. 17–30.

Statistics

Morris, Sherwood and May. *New Start in Business, Based on Studies of the Relation of Invested Capital to the Expense Budget and Sales Volume; Results of a Survey of Manufacturers in the Popular Price Dress Industry.* New York, Morris, Sherwood and May, c 1933. 16 p.

CORPORATIONS

Law

Michigan

Lewis, Fletcher. *Some Legal and Accounting Questions Presented by the Michigan General Corporation Act.* ACCOUNTING REVIEW, June 1933, p. 145–54.

COST AND FACTORY ACCOUNTING

Davidson, H. J. *New Outlook on Cost Accounting.* ACCOUNTANT IN AUSTRALIA, May 1933, p. 177–95.

Overhead

Makin, F. Bradshaw. *Overhead Costs in Theory and Practice.* ACCOUNTANT, July 1, 1933, p. 13–4.

Preshaw, G. *Unabsorbed Overhead—Should it be Charged to Inventory.* AMERICAN ACCOUNTANT, June 1933, p. 179–80.

Standard Costs

Lindblom, William V. *Standard Costs on the Instalment Plan.* IRON AGE, April 13, 1933, p. 580–1, Advertising page 18.

CUTLERY

Cost Accounting

Costing as Applied to the Cutlery Industry (Being a Report of a Discussion on Methods of Costing as Applied to the Cutlery Industry, Held at the Cutlers' Hall, Sheffield, 7th February, 1933, Under the Auspices of the Sheffield and District Branch of the Institute of Cost and Works Accountants.) COST ACCOUNTANT, June 1933, p. 4–11.

CYCLES

McCracken, Harlan Linneus. *Value Theory and Business Cycles.* New York, Falcon Press, Incorporated, c 1933. 270 p.

DEBT, INTERNATIONAL

Illinois, University of. College of Commerce and Business Administration, Bureau of Business Research. *Some American Proposals for War Debt Revision, Edited by E. L. Bogart.* Urbana, Illinois, University of Illinois, College of Commerce and Business Administration, Bureau of Business Research, 1933. 44 p. (Bulletin no. 47.)

DEPARTMENT STORES

Statistics

Gault, Edgar H. *Performance of Department Stores: 1932.* Ann Arbor, Michigan, University of Michigan, School of Business Administration, Bureau of Business Research, 1933. 83 p. (Michigan Business Studies, vol. 5, no. 3.)

DEPRECIATION, DEPLETION AND OBSOLESCENCE

Clader, Will-A. *Depreciation, Income Tax and Dividends.* JOURNAL OF ACCOUNTANCY, July 1933, p. 47–54.

Rowland, Stanley W. *Depreciation Reconsidered.* London, Gee and Company, Limited, 1933. 47 p.

Scott, Dr. *Observed vs. Theoretical Depreciation.* AMERICAN ACCOUNTANT, June 1933, p. 170–1.

DIVIDENDS

Briggs, L. L. *Dividends and the General Corporation Statutes.* ACCOUNTING REVIEW, June 1933, p. 130–44.

EDUCATION

Heckman, H. M. *Standards of Accounting Training.* ACCOUNTING REVIEW, June 1933, p. 110–2.
Winter, Sidney G. *Accountancy for the General Business Student.* ACCOUNTING REVIEW, June 1933, p. 105–9.

GOVERNMENT

Accounting

Hackett, R. P. *Recent Developments in Governmental and Institutional Accounting.* ACCOUNTING REVIEW, June 1933, p. 122–7.

INCOME

Dohr, James L. *Work of the Joint Committee on Income Tax Statistics.* ACCOUNTING REVIEW, June 1933, p. 128–9.

INDUSTRIAL CODES

Provisions of Industrial Codes and Agreements. New York, National Association of Cost Accountants, June 15, 1933. (N. A. C. A. BULLETIN, vol. 14, no. 2, section 1, p. 1481–4.)

INDUSTRY

United States

Commerce Clearing House, Incorporated. *Federal Trade Regulation Service.* 2 volumes. New York, Commerce Clearing House, Incorporated, 1933. Loose leaf.
Kirsh, Benjamin S., and Shapiro, Harold Roland. *National Industrial Recovery Act; an Analysis.* New York, Central Book Company, 1933. 156 p.
Krueger, Edward William. *Outline of the Practical Application to Industry of the Proposed National Industrial Recovery Act.* New York, National Association of Cost Accountants, June 15, 1933. (N. A. C. A. BULLETIN, vol. 14, no. 20, section 1, p. 1465–76.)

INFLATION

Madden, John T. *Gold and Inflation.* BULLETIN, THE NEW YORK STATE SOCIETY OF CERTIFIED PUBLIC ACCOUNTANTS, July 1933, p. 3–17.

IRON AND STEEL

Cost Accounting

Danford, Fred. *Some Modern Developments in Accounting for Manufacturing Enterprises.* ACCOUNTING REVIEW, June 1933, p. 119–21.

LAW

Great Britain

Askew, H. Royston. *Private Bill Procedure.* ACCOUNTANT, June 10, 1933, p. 781–5.

MONEY

Day, John Percival. *Currency Depreciation; a Help or a Hindrance.* CANADIAN CHARTERED ACCOUNTANT, July 1933, p. 73–80.

NEWSPAPERS

Accounting

Mundie, J. Gray. *Some Remarks on Newspaper Accounts.* CANADIAN CHARTERED ACCOUNTANT, July 1933, p. 65–72.

OIL TRADE

Accounting

Humphreys, H. G. *Accounts of an Oil Company—Part 4.* JOURNAL OF ACCOUNTANCY, July 1933, p. 31–46.

PAYROLLS

Woods, J. B. C. *Supplementing the Payroll Audit.* EASTERN UNDERWRITER, June 16, 1933, p. 33.

POWER COSTS

Evans, Carl W. *Prorating Purchased Power Costs.* FACTORY MANAGEMENT AND MAINTENANCE, June 1933, p. 223–5.

McCrea, W. S., Jr. *Segregation of Water Power Costs.* ELECTRICAL ENGINEERING, May 1933, p. 313–8.

PROFESSIONAL MEN

Accounting

Abbe, Leo T. *Applied Accounting for the Professions.* MUTUAL PROFESSIONAL NEWS, March, April, May 1933, p. 11, 27; 9–10; 10.

PROFITS

Epstein, Ralph C. *Valuation and Other Problems Connected with the Study of Corporate Profits.* ACCOUNTING REVIEW, June 1933, p. 94–8.

PUBLIC UTILITIES

Government Regulation and Control

Ulm, Aaron Hardy. *Pending Conflict Between State and Federal Regulation.* PUBLIC UTILITIES FORTNIGHTLY, July 6, 1933, p. 9–15.

Rates

Cooke, C. B., Jr. *Why Rate Cases Cost too Much.* PUBLIC UTILITIES FORTNIGHTLY, July 6, 1933, p. 16–21.

RAILROADS

Accounting

Ross, H. W. *Railway Accounting; the Urgent Necessity of the Adoption of Costing for the Better Control of Expenditure.* ACCOUNTANT, June 10, 1933, p. 777–80.

RESEARCH

Appleyard, C. E. *Scientific Research as a Means of Reducing Costs.* COST ACCOUNTANT, June 1933, p. 21–4.

SHOE TRADE

Accounting

Gross, Bernard. *Accounting for a Chain of Retail Shoe Stores.* PATHFINDER SERVICE BULLETIN, June 1933, p. 1, 4–8.

STATEMENTS, FINANCIAL

Bowles, H. G. *Statement Presentation of Non-Current Gains and Losses.* AMERICAN ACCOUNTANT, June 1933, p. 176–8.

STOCK

Greenwood, Thomas. *Valuation of Unquoted Shares.* ACCOUNTANT, June 17, 1933, p. 813–8.

STORES SYSTEMS AND STOCK RECORDS

Miller, Andrew. *Stores Department Accounting.* ACCOUNTANT, July 1, 1933, p. 24–5.

TANNING

Cost Accounting

Nickerson, Clarence B. *Cost Allocation in the Manufacture of Counters and Innersoles.* New York, National Association of Cost Accountants, July 1, 1933. (N. A. C. A. BULLETIN, vol. 14, no. 21, section 1, p. 1555–66.)

Stevenson, Herbert F., and Slack, F. M. *Cost Accounting in a Sole Leather Tannery.* New York, National Association of Cost Accountants, July 1, 1933. (N. A. C. A. BULLETIN, vol. 14, no. 21, section 1, p. 1541–55.)

TAXATION, HAWAII

Greaney, E. J. *Hawaii Evolves New Kind of Tax.* AMERICAN ACCOUNTANT, June 1933, p. 193–5.

TERMINOLOGY

Preinreich, Gabriel A. D. *Accounting Terminology.* ACCOUNTING REVIEW, June 1933, p. 113–6.

Periodical Addresses:

Accountant, 8 Kirby Street, London, E. C. 1, England.
Accounting Review, 217 Commerce Building, University of Illinois, Urbana, Illinois.
American Accountant, 225 Broadway, New York City.
Bulletin, The New York State Society of Certified Public Accountants, 30 Broad Street, New York City.
Canadian Chartered Accountant, 10 Adelaide Street East, Toronto, Canada.
Chemical and Metallurgical Engineering, 330 West 42nd Street, New York City.
Cost Accountant, 6 Duke Street, St. James's, S. W. 1, London, England.
Eastern Underwriter, 94 Fulton Street, New York City.
Electrical Engineering, 33 West 39th Street, New York City.
Factory and Industrial Management, 330 West 42nd Street, New York City.
Iron Age, 239 West 39th Street, New York City.
Journal of Accountancy, 135 Cedar Street, New York City.
Mutual Professional News, 33 West 42nd Street, New York City.
N. A. C. A. Bulletin, 1790 Broadway, New York City.
Pathfinder Service Bulletin, 330 North Los Angeles Street, Los Angeles, California.
Public Utilities Fortnightly, Munsey Building, Washington, D. C.

A SERVICE TO BOOK BUYERS

For the convenience of members and other accountants the American Institute of Accountants has established a bookshop and mail-order service through which technical books of all publishers are available for sale at regular prices.

The necessity of sending separate orders to the respective publishers of books and magazines which may be desired can be avoided by ordering through the central agency of the Institute.

Visitors are welcome at the bookshop on the street floor of the building at 135 Cedar Street, New York.

American Institute Publishing Co., Inc.

135 Cedar Street, New York

OFFICIAL PUBLISHERS AND BOOK SELLERS FOR THE AMERICAN INSTITUTE OF ACCOUNTANTS

RUMFORD PRESS
CONCORD. N. H.

DUTIES of the JUNIOR ACCOUNTANT

By

ALFRED B. CIPRIANI

"BECAUSE of the many developments in business practice and in accounting since the issue of the original volume, the publishers considered a revised edition might make the book even more useful. A. B. Cipriani, an accountant of the firm with which Messrs. Reynolds and Thornton were associated, took the matter in hand and the result is a new book under the same name as the old one, containing more information upon those subjects where this appears necessary and in addition the introduction of much new material.

"While this book has been written for and addressed to the junior accountant who will find it of unquestioned service and help in his everyday work, it can be, in my opinion, also of very considerable service to the senior accountant and to the principal. I would unhesitatingly commend the book to all Canadian accountants who will find in it many valuable and interesting suggestions which might with profit be followed.

"I understand some of our leading firms of accountants made a custom of handing a copy of the original volume to each young man entering their offices. I am sure that no mistake would be made in continuing this practice with a copy of the new volume."

— *The Canadian Chartered Accountant, Toronto, Canada.*

170 Pages, Cloth Bound, Price Delivered in U. S. $1.50

AMERICAN INSTITUTE PUBLISHING CO., INC.

135 CEDAR STREET, NEW YORK